

CONTAINS NO CBI



Form Approved  
OMB No. 2010-0019  
Approval Expires 12-31-89

EPA-OTS



000622373N

90-890000 354

89 JUL -5 PM 2:41  
OTS OPERATIONAL CONTROL  
OFFICE

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
Comprehensive Assessment Information Rule  
REPORTING FORM

When completed, send this form to:

Document Processing Center  
Office of Toxic Substances, TS-790  
U.S. Environmental Protection Agency  
401 M Street, SW  
Washington, DC 20460  
Attention: CAIR Reporting Office

For Agency Use Only:

Date of Receipt: \_\_\_\_\_

Document  
Control Number: \_\_\_\_\_

Docket Number: \_\_\_\_\_

SECTION 1 GENERAL MANUFACTURER, IMPORTER, AND PROCESSOR INFORMATION

PART A GENERAL REPORTING INFORMATION

1.01 This Comprehensive Assessment Information Rule (CAIR) Reporting Form has been completed in response to the Federal Register Notice of..... 12 22 88  
CBI mo. day year

☐ a. If a Chemical Abstracts Service Number (CAS No.) is provided in the Federal Register, list the CAS No. .... 026471-62-5

b. If a chemical substance CAS No. is not provided in the Federal Register, list either (i) the chemical name, (ii) the mixture name, or (iii) the trade name of the chemical substance as provided in the Federal Register.

(i) Chemical name as listed in the rule ..... N/A

(ii) Name of mixture as listed in the rule .... N/A

(iii) Trade name as listed in the rule ..... N/A

c. If a chemical category is provided in the Federal Register, report the name of the category as listed in the rule, the chemical substance CAS No. you are reporting on which falls under the listed category, and the chemical name of the substance you are reporting on which falls under the listed category.

Name of category as listed in the rule ..... N/A

CAS No. of chemical substance .....             -    -  

Name of chemical substance ..... N/A

1.02 Identify your reporting status under CAIR by circling the appropriate response(s).

CBI Manufacturer ..... 1

☐ Importer ..... 2

Processor ..... ③

X/P manufacturer reporting for customer who is a processor ..... 4

X/P processor reporting for customer who is a processor ..... 5

☐ Mark (X) this box if you attach a continuation sheet.

1.03 Does the substance you are reporting on have an "x/p" designation associated with it in the above-listed Federal Register Notice?

CBI  
☐ Yes ..... [☒] Go to question 1.04  
☐ No ..... [☐] Go to question 1.05

1.04 a. Do you manufacture, import, or process the listed substance and distribute it under a trade name(s) different than that listed in the Federal Register Notice? Circle the appropriate response.

CBI  
☐ Yes ..... 1  
☐ No ..... (2)

b. Check the appropriate box below:

☐ You have chosen to notify your customers of their reporting obligations

Provide the trade name(s) .... N/A

☐ You have chosen to report for your customers

☐ You have submitted the trade name(s) to EPA one day after the effective date of the rule in the Federal Register Notice under which you are reporting.

1.05 If you buy a trade name product and are reporting because you were notified of your reporting requirements by your trade name supplier, provide that trade name.

CBI  
Trade name ..... Voranate (R) T-80 Type I Toluene Diisocyanate

☐ Is the trade name product a mixture? Circle the appropriate response.

Yes ..... 1  
No ..... (2)

1.06 Certification -- The person who is responsible for the completion of this form must sign the certification statement below:

CBI  
☐ "I hereby certify that, to the best of my knowledge and belief, all information entered on this form is complete and accurate."

F. M. Lima

NAME

*F. M. Lima*  
SIGNATURE

6-14-89  
DATE SIGNED

Plant Manager

TITLE

( 219 ) 294 - 5663  
TELEPHONE NO.

☐ Mark (X) this box if you attach a continuation sheet.

- 1.07 Exemptions From Reporting -- If you have provided EPA or another Federal agency with the required information on a CAIR Reporting Form for the listed substance within the past 3 years, and this information is current, accurate, and complete for the time period specified in the rule, then sign the certification below. You CBI ☐ are required to complete section 1 of this CAIR form and provide any information now required but not previously submitted. Provide a copy of any previous submissions along with your Section 1 submission.

"I hereby certify that, to the best of my knowledge and belief, all required information which I have not included in this CAIR Reporting Form has been submitted to EPA within the past 3 years and is current, accurate, and complete for the time period specified in the rule."

N/A		
NAME	SIGNATURE	DATE SIGNED
( )		
TITLE	TELEPHONE NO.	DATE OF PREVIOUS SUBMISSION

- 1.08 CBI Certification -- If you have asserted any CBI claims in this report you must certify that the following statements truthfully and accurately apply to all of those confidentiality claims which you have asserted.

CBI ☐ "My company has taken measures to protect the confidentiality of the information, and it will continue to take these measures; the information is not, and has not been, reasonably ascertainable by other persons (other than government bodies) by using legitimate means (other than discovery based on a showing of special need in a judicial or quasi-judicial proceeding) without my company's consent; the information is not publicly available elsewhere; and disclosure of the information would cause substantial harm to my company's competitive position."

N/A		
NAME	SIGNATURE	DATE SIGNED
( )		
TITLE	TELEPHONE NO.	

☐ Mark (X) this box if you attach a continuation sheet.

## 1.09 Facility Identification

Dun & Bradstreet Number .....[0]7]-[4]3]1]-[7]0]9]0]  
EPA ID Number .....[0]7]4]3]1]7]0]9]0]  
Employer ID Number .....[5]0]4]0]7]6]9]0]  
Primary Standard Industrial Classification (SIC) Code .....[3]0]8]6]  
Other SIC Code .....[ ]][ ]][ ]][ ]]  
Other SIC Code .....[ ]][ ]][ ]][ ]]

Dun & Bradstreet Number .....[1][0]-[6][1][8]-[7][3][5][4]  
Employer ID Number .....[5][0][4][0][7][6][9][0]

6

### 1.11 Parent Company Identification

CBI    Name   [K][n][o][l][l]\_ \_[I][n][t'l]\_ \_[H][o][l][d][i][n][g][s]\_ \_[I][n][c]\_ \_  
          Address   [1][5][3]\_ \_[E][a][s][t]\_ \_[5][3][r][d]\_ \_[S][t][r][e][e][t]\_ \_  
    Street  
                                  [S][u][i][t][e]\_ \_[5][9][0][0]\_ \_[N][e][w]\_ \_[Y][o][r][k]\_ \_  
    City  
    [N][Y]     [1][0][0][2][2]--[\_][\_][\_]  
    State       Zip  
 Dun & Bradstreet Number   .....[0][5]-[6][3][4]-[1][6][0][5]

## 1.12 Technical Contact

CBI    Name   [E][r][i][c]   [S][p][e][a][s]   [ ]   [ ]   [ ]   [ ]   [ ]   [ ]   [ ]   [ ]   [ ]   [ ]   [ ]   [ ]   [ ]  
[ ]   Title   [P][l][a][n][t]   [C][h][e][m][i][s][t]   [ ]   [ ]   [ ]   [ ]   [ ]   [ ]   [ ]   [ ]   [ ]   [ ]   [ ]   [ ]  
Address   [6][0][3]   [I][n][d][u][s][t][r][i][a][l]   [P][a][r][k][w][a][y]   [ ]   [ ]   [ ]  
  Street  
                       [E][l][k][h][a][r][t]   [ ]   [ ]   [ ]   [ ]   [ ]   [ ]   [ ]   [ ]   [ ]   [ ]   [ ]   [ ]  
  City  
  [I][N]            [4][6][5][1][6]--[ ]   [ ]   [ ]   [ ]  
  State                          Zip  
Telephone Number ..... [2][1][9]-[6][9][4]-[5][6][6][3]

1.13 This reporting year is from ..... 01 88 to 12 88  
Mo. Year Mo. Year

☐ Mark (X) this box if you attach a continuation sheet.

2.04 State the quantity of the listed substance that your facility manufactured, imported, or processed during the 3 corporate fiscal years preceding the reporting year in descending order.

CBI

☐ Year ending .....      
Mo. Year

Quantity manufactured ..... N/A kg

Quantity imported ..... N/A kg

Quantity processed ..... 2,470,076 kg

Year ending .....      
Mo. Year

Quantity manufactured ..... N/A kg

Quantity imported ..... N/A kg

Quantity processed ..... 2,395,887 kg

Year ending .....      
Mo. Year

Quantity manufactured ..... N/A kg

Quantity imported ..... N/A kg

Quantity processed ..... 2,509,531 kg

2.05 Specify the manner in which you manufactured the listed substance. Circle all appropriate process types.

CBI

☐ ..... N/A  
Continuous process ..... 1  
Semicontinuous process ..... N/A ..... 2  
Batch process ..... N/A ..... 3

☐ Mark (X) this box if you attach a continuation sheet.

2.06 Specify the manner in which you processed the listed substance. Circle all appropriate process types.

☐ Continuous process ..... 1  
Semicontinuous process ..... 2  
Batch process ..... (3)

2.07 State your facility's name-plate capacity for manufacturing or processing the listed substance. (If you are a batch manufacturer or batch processor, do not answer this question.)

☐ Manufacturing capacity ..... N/A kg/yr  
Processing capacity ..... N/A kg/yr

2.08 If you intend to increase or decrease the quantity of the listed substance manufactured, imported, or processed at any time after your current corporate fiscal year, estimate the increase or decrease based upon the reporting year's production volume.

<input type="checkbox"/>	Manufacturing Quantity (kg)	Importing Quantity (kg)	Processing Quantity (kg)
Amount of increase	N/A	N/A	UK
Amount of decrease	N/A	N/A	UK

☐ Mark (X) this box if you attach a continuation sheet.



2.09 For the three largest volume manufacturing or processing process types involving the listed substance, specify the number of days you manufactured or processed the listed substance during the reporting year. Also specify the average number of hours per day each process type was operated. (If only one or two operations are involved, list those.)

CBI

☐

	<u>Days/Year</u>	<u>Average Hours/Day</u>
--	------------------	------------------------------

Process Type #1 (The process type involving the largest quantity of the listed substance.)

Manufactured .....	<u>N/A</u>	<u>N/A</u>
Processed .....	<u>245</u>	<u>2.19</u>

Process Type #2 (The process type involving the 2nd largest quantity of the listed substance.)

Manufactured .....	<u>N/A</u>	<u>N/A</u>
Processed .....	<u>N/A</u>	<u>N/A</u>

Process Type #3 (The process type involving the 3rd largest quantity of the listed substance.)

Manufactured .....	<u>N/A</u>	<u>N/A</u>
Processed .....	<u>N/A</u>	<u>N/A</u>

2.10 State the maximum daily inventory and average monthly inventory of the listed substance that was stored on-site during the reporting year in the form of a bulk chemical.

CBI

☐

Maximum daily inventory .....	_____	kg
Average monthly inventory .....	_____	kg

☐ Mark (X) this box if you attach a continuation sheet.

- 2.11 Related Product Types -- List any byproducts, coproducts, or impurities present with the listed substance in concentrations greater than 0.1 percent as it is manufactured, imported, or processed. The source of byproducts, coproducts, or impurities means the source from which the byproducts, coproducts, or impurities are made or introduced into the product (e.g., carryover from raw material, reaction product, etc.).

CBI

☐

<u>CAS No.</u>	<u>Chemical Name</u>	<u>Byproduct, Coproduct or Impurity<sup>1</sup></u>	<u>Concentration (%) (specify <math>\pm</math> % precision)</u>	<u>Source of By-products, Coproducts, or Impurities</u>
<u>26471-62-5</u>	<u>Toluene Diisocyanate</u>	<u>UK</u>	<u>UK</u>	<u>UK</u>
<u>                    </u>	<u>                    </u>	<u>                    </u>	<u>                    </u>	<u>                    </u>
<u>                    </u>	<u>                    </u>	<u>                    </u>	<u>                    </u>	<u>                    </u>
<u>                    </u>	<u>                    </u>	<u>                    </u>	<u>                    </u>	<u>                    </u>
<u>                    </u>	<u>                    </u>	<u>                    </u>	<u>                    </u>	<u>                    </u>
<u>                    </u>	<u>                    </u>	<u>                    </u>	<u>                    </u>	<u>                    </u>

<sup>1</sup>Use the following codes to designate byproduct, coproduct, or impurity:

B = Byproduct  
C = Coproduct  
I = Impurity

☐ Mark (X) this box if you attach a continuation sheet.

- 2.12 Existing Product Types -- List all existing product types which you manufactured, imported, or processed using the listed substance during the reporting year. List the quantity of listed substance you use for each product type as a percentage of the total volume of listed substance used during the reporting year. Also list the quantity of listed substance used captively on-site as a percentage of the value listed under column b., and the types of end-users for each product type. (Refer to the instructions for further explanation and an example.)

CBI

☐

a.	b.	c.	d.
Product Types <sup>1</sup>	% of Quantity Manufactured, Imported, or Processed	% of Quantity Used Captively On-Site	Type of End-Users <sup>2</sup>
B	100%	100%	N/A

<sup>1</sup>Use the following codes to designate product types:

A = Solvent	L = Moldable/Castable/Rubber and additives
B = Synthetic reactant	M = Plasticizer
C = Catalyst/Initiator/Accelerator/ Sensitizer	N = Dye/Pigment/Colorant/Ink and additives
D = Inhibitor/Stabilizer/Scavenger/ Antioxidant	O = Photographic/Reprographic chemical and additives
E = Analytical reagent	P = Electrodeposition/Plating chemicals
F = Chelator/Coagulant/Sequestrant	Q = Fuel and fuel additives
G = Cleanser/Detergent/Degreaser	R = Explosive chemicals and additives
H = Lubricant/Friction modifier/Antiwear agent	S = Fragrance/Flavor chemicals
I = Surfactant/Emulsifier	T = Pollution control chemicals
J = Flame retardant	U = Functional fluids and additives
K = Coating/Binder/Adhesive and additives	V = Metal alloy and additives
	W = Rheological modifier
	X = Other (specify) _____

<sup>2</sup>Use the following codes to designate the type of end-users:

I = Industrial	CS = Consumer
CM = Commercial	H = Other (specify) _____

☐ Mark (X) this box if you attach a continuation sheet.

- 2.13 Expected Product Types -- Identify all product types which you expect to manufacture, import, or process using the listed substance at any time after your current corporate fiscal year. For each use, specify the quantity you expect to manufacture, import, or process for each use as a percentage of the total volume of listed substance used during the reporting year. Also list the quantity of listed substance used captively on-site as a percentage of the value listed under column b., and the types of end-users for each product type. (Refer to the instructions for further explanation and an example.)

CBI

☐

a.	b.	c.	d.
Product Types <sup>1</sup>	% of Quantity Manufactured, Imported, or Processed	% of Quantity Used Captively On-Site	Type of End-Users <sup>2</sup>
B	100%	100%	N/A

<sup>1</sup>Use the following codes to designate product types:

A = Solvent	L = Moldable/Castable/Rubber and additives
B = Synthetic reactant	M = Plasticizer
C = Catalyst/Initiator/Accelerator/ Sensitizer	N = Dye/Pigment/Colorant/Ink and additives
D = Inhibitor/Stabilizer/Scavenger/ Antioxidant	O = Photographic/Reprographic chemical and additives
E = Analytical reagent	P = Electrodeposition/Plating chemicals
F = Chelator/Coagulant/Sequestrant	Q = Fuel and fuel additives
G = Cleanser/Detergent/Degreaser	R = Explosive chemicals and additives
H = Lubricant/Friction modifier/Antiwear agent	S = Fragrance/Flavor chemicals
I = Surfactant/Emulsifier	T = Pollution control chemicals
J = Flame retardant	U = Functional fluids and additives
K = Coating/Binder/Adhesive and additives	V = Metal alloy and additives
	W = Rheological modifier
	X = Other (specify) _____

<sup>2</sup>Use the following codes to designate the type of end-users:

I = Industrial	CS = Consumer
CM = Commercial	H = Other (specify) _____

☐ Mark (X) this box if you attach a continuation sheet.

2.14 Final Product -- Complete the following table for each type of final product manufactured, imported, or processed at your facility that contains the listed substance other than as an impurity.

☐

a.	b.	c.	d.
Product Type <sup>1</sup>	Final Product's Physical Form <sup>2</sup>	Average % Composition of Listed Substance in Final Product	Type of End-Users <sup>3</sup>
N/A	N/A	N/A	N/A

<sup>1</sup>Use the following codes to designate product types:

A = Solvent	L = Moldable/Castable/Rubber and additives
B = Synthetic reactant	M = Plasticizer
C = Catalyst/Initiator/Accelerator/Sensitizer	N = Dye/Pigment/Colorant/Ink and additives
D = Inhibitor/Stabilizer/Scavenger/Antioxidant	O = Photographic/Reprographic chemical and additives
E = Analytical reagent	P = Electrodeposition/Plating chemicals
F = Chelator/Coagulant/Sequestrant	Q = Fuel and fuel additives
G = Cleanser/Detergent/Degreaser	R = Explosive chemicals and additives
H = Lubricant/Friction modifier/Antiwear agent	S = Fragrance/Flavor chemicals
I = Surfactant/Emulsifier	T = Pollution control chemicals
J = Flame retardant	U = Functional fluids and additives
K = Coating/Binder/Adhesive and additives	V = Metal alloy and additives
	W = Rheological modifier
	X = Other (specify) _____

<sup>2</sup>Use the following codes to designate the final product's physical form:

A = Gas	F2 = Crystalline solid
B = Liquid	F3 = Granules
C = Aqueous solution	F4 = Other solid
D = Paste	G = Gel
E = Slurry	H = Other (specify) _____
F1 = Powder	

<sup>3</sup>Use the following codes to designate the type of end-users:

I = Industrial	CS = Consumer
CM = Commercial	H = Other (specify) _____

☐ Mark (X) this box if you attach a continuation sheet.

2.15 Circle all applicable modes of transportation used to deliver bulk shipments of the  
CBI listed substance to off-site customers.

<input type="checkbox"/>	Truck .....	N/A	1
	Railcar .....	N/A	2
	Barge, Vessel .....	N/A	3
	Pipeline .....	N/A	4
	Plane .....	N/A	5
	Other (specify) .....		6

2.16 Customer Use -- Estimate the quantity of the listed substance used by your customers  
CBI or prepared by your customers during the reporting year for use under each category  
of end use listed (i-iv).

☐

Category of End Use

i. Industrial Products

Chemical or mixture .....	N/A	kg/yr
Article .....	N/A	kg/yr

ii. Commercial Products

Chemical or mixture .....	N/A	kg/yr
Article .....	N/A	kg/yr

iii. Consumer Products

Chemical or mixture .....	N/A	kg/yr
Article .....	N/A	kg/yr

iv. Other

Distribution (excluding export) .....	N/A	kg/yr
Export .....	N/A	kg/yr
Quantity of substance consumed as reactant .....	N/A	kg/yr
Unknown customer uses .....	N/A	kg/yr

☐ Mark (X) this box if you attach a continuation sheet.

### SECTION 3 PROCESSOR RAW MATERIAL IDENTIFICATION

#### PART A GENERAL DATA

3.01 Specify the quantity purchased and the average price paid for the listed substance for each major source of supply listed. Product trades are treated as purchases.  
CBI The average price is the market value of the product that was traded for the listed substance.

<u>Source of Supply</u>	<u>Quantity (kg)</u>	<u>Average Price (\$/kg)</u>
The listed substance was manufactured on-site.	N/A	N/A
The listed substance was transferred from a different company site.	N/A	N/A
The listed substance was purchased directly from a manufacturer or importer.	2,661,648	2.51
The listed substance was purchased from a distributor or repackager.	N/A	N/A
The listed substance was purchased from a mixture producer.	N/A	N/A

3.02 Circle all applicable modes of transportation used to deliver the listed substance to your facility.

- ☐ Truck ..... ①
- ☐ Railcar ..... ②
- ☐ Barge, Vessel ..... 3
- ☐ Pipeline ..... 4
- ☐ Plane ..... 5
- ☐ Other (specify) \_\_\_\_\_ 6

☐ Mark (X) this box if you attach a continuation sheet.

3.03 a. Circle all applicable containers used to transport the listed substance to your facility.  
CBI

☐

Bags ..... 1  
Boxes ..... 2  
Free standing tank cylinders ..... 3  
Tank rail cars ..... (4)  
Hopper cars ..... 5  
Tank trucks ..... (6)  
Hopper trucks ..... 7  
Drums ..... 8  
Pipeline ..... 9  
Other (specify) \_\_\_\_\_ 10

b. If the listed substance is transported in pressurized tank cylinders, tank rail cars, or tank trucks, state the pressure of the tanks.

Tank cylinders ..... N/A mmHg  
Tank rail cars ..... UK mmHg  
Tank trucks ..... UK mmHg

☐ Mark (X) this box if you attach a continuation sheet.



---

PART B RAW MATERIAL IN THE FORM OF A MIXTURE

---

3.04 If you obtain the listed substance in the form of a mixture, list the trade name(s) of the mixture, the name of its supplier(s) or manufacturer(s), an estimate of the average percent composition by weight of the listed substance in the mixture, and the amount of mixture processed during the reporting year.

CBI

☐

<u>Trade Name</u>	<u>Supplier or Manufacturer</u>	<u>Average % Composition by Weight (specify <math>\pm</math> % precision)</u>	<u>Amount Processed (kg/yr)</u>
N/A	N/A	N/A	N/A

---

☐ Mark (X) this box if you attach a continuation sheet.

---

PART C RAW MATERIAL VOLUME

3.05 State the quantity of the listed substance used as a raw material during the reporting year in the form of a class I chemical, class II chemical, or polymer, and the percent composition, by weight, of the listed substance.

☐

	Quantity Used (kg/yr)	% Composition by Weight of Listed Sub- stance in Raw Material (specify $\pm$ % precision)
Class I chemical	2,651,644	100 +/- .1%
Class II chemical	N/A	N/A
Polymer	N/A	N/A

☐ Mark (X) this box if you attach a continuation sheet.

---

## SECTION 4 PHYSICAL/CHEMICAL PROPERTIES

---

### General Instructions:

If you are reporting on a mixture as defined in the glossary, reply to questions in Section 4 that are inappropriate to mixtures by stating "NA -- mixture."

For questions 4.06-4.15, if you possess any hazard warning statement, label, MSDS, or other notice that addresses the information requested, you may submit a copy or reasonable facsimile in lieu of answering those questions which it addresses.

---

### PART A PHYSICAL/CHEMICAL DATA SUMMARY

---

- 4.01 Specify the percent purity for the three major<sup>1</sup> technical grade(s) of the listed substance as it is manufactured, imported, or processed. Measure the purity of the substance in the final product form for manufacturing activities, at the time you import the substance, or at the point you begin to process the substance.

☐ CBI

	<u>Manufacture</u>	<u>Import</u>	<u>Process</u>
Technical grade #1	<u>N/A</u> % purity	<u>N/A</u> % purity	<u>99.9</u> % purity
Technical grade #2	<u>N/A</u> % purity	<u>N/A</u> % purity	<u>N/A</u> % purity
Technical grade #3	<u>N/A</u> % purity	<u>N/A</u> % purity	<u>N/A</u> % purity

-----  
<sup>1</sup>Major = Greatest quantity of listed substance manufactured, imported or processed.

- 4.02 Submit your most recently updated Material Safety Data Sheet (MSDS) for the listed substance, and for every formulation containing the listed substance. If you possess an MSDS that you developed and an MSDS developed by a different source, submit your version. Indicate whether at least one MSDS has been submitted by circling the appropriate response.

Yes ..... ①

No ..... 2

Indicate whether the MSDS was developed by your company or by a different source.

Your company ..... 1

Another source ..... ②

---

☒ Mark (X) this box if you attach a continuation sheet.

4.03 Submit a copy or reasonable facsimile of any hazard information (other than an MSDS) that is provided to your customers/users regarding the listed substance or any formulation containing the listed substance. Indicate whether this information has been submitted by circling the appropriate response.

Yes ..... 1

No ..... (2)

4.04 For each activity that uses the listed substance, circle all the applicable number(s) corresponding to each physical state of the listed substance during the activity listed. Physical states for importing and processing activities are determined at the time you import or begin to process the listed substance. Physical states for manufacturing, storage, disposal and transport activities are determined using the final state of the product.

CBI

[ ]

Activity	Physical State				
	Solid	Slurry	Liquid	Liquified Gas	Gas
Manufacture	1	2	3	4	5
Import	1	2	3	4	5
Process	1	2	(3)	4	5
Store	1	2	(3)	4	5
Dispose	1	2	3	4	5
Transport	1	2	3	4	5

[ ] Mark (X) this box if you attach a continuation sheet.

4.05 Particle Size -- If the listed substance exists in particulate form during any of the following activities, indicate for each applicable physical state the size and the percentage distribution of the listed substance by activity. Do not include particles  $\geq 10$  microns in diameter. Measure the physical state and particle sizes for importing and processing activities at the time you import or begin to process the listed substance. Measure the physical state and particle sizes for manufacturing storage, disposal and transport activities using the final state of the product.

CBI

☐

<u>Physical State</u>		<u>Manufacture</u>	<u>Import</u>	<u>Process</u>	<u>Store</u>	<u>Dispose</u>	<u>Transport</u>
Dust	<1 micron	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
	1 to <5 microns	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
	5 to <10 microns	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
Powder	<1 micron	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
	1 to <5 microns	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
	5 to <10 microns	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
Fiber	<1 micron	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
	1 to <5 microns	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
	5 to <10 microns	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
Aerosol	<1 micron	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
	1 to <5 microns	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
	5 to <10 microns	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>

☐ Mark (X) this box if you attach a continuation sheet.

---

## SECTION 5 ENVIRONMENTAL FATE

---

### PART A RATE CONSTANTS AND TRANSFORMATION PRODUCTS

---

5.01 Indicate the rate constants for the following transformation processes.

a. Photolysis:

Absorption spectrum coefficient (peak) .... UK (1/M cm) at UK nm  
Reaction quantum yield,  $\phi$  ..... UK at UK nm  
Direct photolysis rate constant,  $k_p$ , at ... UK 1/hr UK latitude

b. Oxidation constants at 25°C:

For  $^1O_2$  (singlet oxygen),  $k_{ox}$  ..... UK 1/M hr  
For  $RO_2$  (peroxy radical),  $k_{ox}$  ..... UK 1/M hr

c. Five-day biochemical oxygen demand,  $BOD_5$  ... UK mg/l

d. Biotransformation rate constant:

For bacterial transformation in water,  $k_b$  ... UK 1/hr  
Specify culture ..... UK

e. Hydrolysis rate constants:

For base-promoted process,  $k_B$  ..... UK 1/M hr  
For acid-promoted process,  $k_A$  ..... UK 1/M hr  
For neutral process,  $k_N$  ..... UK 1/hr

f. Chemical reduction rate (specify conditions) UK

g. Other (such as spontaneous degradation) ... UK

---

☐ Mark (X) this box if you attach a continuation sheet.

---

PART B PARTITION COEFFICIENTS

5.02 a. Specify the half-life of the listed substance in the following media.

<u>Media</u>	<u>Half-life (specify units)</u>
Groundwater	UK
Atmosphere	UK
Surface water	UK
Soil	UK

b. Identify the listed substance's known transformation products that have a half-life greater than 24 hours.

<u>CAS No.</u>	<u>Name</u>	<u>Half-life (specify units)</u>		<u>Media</u>
UK	UK	UK	in	UK
UK	UK	UK	in	UK
UK	UK	UK	in	UK
UK	UK	UK	in	UK

5.03 Specify the octanol-water partition coefficient,  $K_{ow}$  ... UK at 25°C  
 Method of calculation or determination ..... UK

5.04 Specify the soil-water partition coefficient,  $K_d$  ..... UK at 25°C  
 Soil type ..... UK

5.05 Specify the organic carbon-water partition coefficient,  $K_{oc}$  ..... UK at 25°C

5.06 Specify the Henry's Law Constant, H ..... UK atm-m<sup>3</sup>/mole

☐ Mark (X) this box if you attach a continuation sheet.

- 5.07 List the bioconcentration factor (BCF) of the listed substance, the species for which it was determined, and the type of test used in deriving the BCF.

<u>Bioconcentration Factor</u>	<u>Species</u>	<u>Test</u> <sup>1</sup>
UK	UK	UK
UK	UK	UK
UK	UK	UK

<sup>1</sup>Use the following codes to designate the type of test:

F = Flowthrough  
S = Static

☐ Mark (X) this box if you attach a continuation sheet.



6.04 For each market listed below, state the quantity sold and the total sales value of the listed substance sold or transferred in bulk during the reporting year.

☐

<u>Market</u>	<u>Quantity Sold or Transferred (kg/yr)</u>	<u>Total Sales Value (\$/yr)</u>
Retail sales		
Distribution -- Wholesalers		
Distribution -- Retailers		
Intra-company transfer		
Repackagers		
Mixture producers		
Article producers		
Other chemical manufacturers or processors		
Exporters		
Other (specify)		

6.05 Substitutes -- List all known commercially feasible substitutes that you know exist for the listed substance and state the cost of each substitute. A commercially feasible substitute is one which is economically and technologically feasible to use in your current operation, and which results in a final product with comparable performance in its end uses.

CBI

☐

<u>Substitute</u>	<u>Cost (\$/kg)</u>
UK	UK

☐ Mark (X) this box if you attach a continuation sheet.

---

SECTION 7 MANUFACTURING AND PROCESSING INFORMATION

---

General Instructions:

For questions 7.04-7.06, provide a separate response for each process block flow diagram provided in questions 7.01, 7.02, and 7.03. Identify the process type from which the information is extracted.

---

PART A MANUFACTURING AND PROCESSING PROCESS TYPE DESCRIPTION

---

7.01 In accordance with the instructions, provide a process block flow diagram showing the major (greatest volume) process type involving the listed substance.

CBI

☐ Process type ..... Flexible Slabstock Polyurethane Foam Manufacturing Process

---

☒ Mark (X) this box if you attach a continuation sheet.

---

7.03 In accordance with the instructions, provide a process block flow diagram showing all process emission streams and emission points that contain the listed substance and which, if combined, would total at least 90 percent of all facility emissions if not treated before emission into the environment. If all such emissions are released from one process type, provide a process block flow diagram using the instructions for question 7.01. If all such emissions are released from more than one process type, provide a process block flow diagram showing each process type as a separate block.

CBI

☐ Process type ..... Flexible Slabstock Polyurethane Foam Manufacturer Process

☒ Mark (X) this box if you attach a continuation sheet.

7.04 Describe the typical equipment types for each unit operation identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type.

CBI

☐ Process type ..... Flexible Slabstock Polyurethane Foam Manufacturer Process

<u>Unit Operation ID Number</u>	<u>Typical Equipment Type</u>	<u>Operating Temperature Range (°C)</u>	<u>Operating Pressure Range (mm Hg)</u>	<u>Vessel Composition</u>
7.1	Vents (4)	Ambient	Atmospheric	Steel
7.2	Polyol Bulk Tanks (4)	Ambient	Atmospheric	Steel
7.3	Gear Pumps (2)	Ambient	< 3100	Steel
7.4	Plate Heat Exchanger	10-40	< 5200	Steel
7.5	Process/Weigh Tanks(4)			
7.6	Screw Pumps	10-40	< 3100	Steel
7.7	Metering/Holding Tank	10-40	Atmospheric	Steel
7.8	Screw Pump	10-40	< 3100	Steel
7.9	Mix Head Flush	10-40	< 2000	N/A
7.10	Mixing Head	10-40	< 1300	Steel
7.11	Vent Fan	Ambient	Atmospheric	Steel
7.12	Reaction Zone- Trough, Fall-Plate, Siderails	< 150	Atmospheric	Steel
7.13	Gear Pumps	10-40	3100	Steel
7.14	Flow Meters, Tachometers	10-40	1600	Glass/Steel
7.15	Centrifical Pumps(2)	10-40	5200	Steel
7.16	Heat Exchangers (2)			
	1 - Plate (M/C)	10-40	5200	Steel
	1 - Shell & Tube(Freon)	10-40	5200	Steel
7.17	Flow Meters	10-40	3100	Glass/Steel

☒ Mark (X) this box if you attach a continuation sheet.

7.05 Describe each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type.

CBI

☐ Process type ..... Flexible Slabstock Polyurethane Foam Manufacturer Process

Process Stream ID Code	Process Stream Description	Physical State <sup>1</sup>	Stream Flow (kg/yr)
7-I,J,L,M,N,O,P	Polyol	OL	5,565,075
7-BB,CC,DD,EE,SS,HH,II,KK,LL,JJ,P	TDI	OL	2,651,644
7-A,T,U(L,M,N,O,P)	Water	OL	222,603
7-B,T,U(L,N,N,O,P)	Colors	OL,S0	< 2,000
7-C,T,U,(L,M,N,O,P)	Amine Catalysts	OL	20,516
7-D,T,U(L,M,N,O,P)	Tin Catalyst	OL	28,189
7-E,T,U(L,M,N,O,P)	Silicones	OL	50,129

<sup>1</sup>Use the following codes to designate the physical state for each process stream:

GC = Gas (condensable at ambient temperature and pressure)  
 GU = Gas (uncondensable at ambient temperature and pressure)  
 S0 = Solid  
 SY = Sludge or slurry  
 AL = Aqueous liquid  
 OL = Organic liquid  
 IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

☒ Mark (X) this box if you attach a continuation sheet.

7.06 Characterize each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the CBI instructions for further explanation and an example.)

☐ Process type ..... Flexible Slabstock Polyurethane Foam Manufacturer Process

a. Process Stream ID Code	b. Known Compounds <sup>1</sup>	c. Concen- trations <sup>2,3</sup> (% or ppm)	d. Other Expected Compounds	e. Estimated Concentrations (% or ppm)
7-I,J,K,L,M,N,O,P	Polyol	99.98%(A)(W)	H <sub>2</sub> O	.025
7-BB,CC,DD,EE,FF GG,HH,II,JJ,KK, LL,P	TDI	99.9%(A)(W)	Hydrolyzable Chloride	.005%
7-A,T,U(L,M,N,O,P)	Water	100%(E)(W)	N/K	N/A
7-B,T,U (L,M,N,O,P)	Colors	100%(E)(W)	N/A	N/A
7-C,T,U(L,M,N,O,P)	Amine Catalysts			
	Triethylenediamine	20% (A)(W)	N/A	N/A
	Dimethylethanolamine	80% (A)(W)	N/A	N/A
7-D,T,U(L,M,N,O,P)	Tin Catalyst			
	2-Ethylheoic Acid	UK	N/A	N/A
	Disononyl phthalate	UK	N/A	N/A

7.06 continued below

☒ Mark (X) this box if you attach a continuation sheet.

7.06 (continued)

<sup>1</sup>For each additive package introduced into a process stream, specify the compounds that are present in each additive package, and the concentration of each component. Assign an additive package number to each additive package and list this number in column b. (Refer to the instructions for further explanation and an example. Refer to the glossary for the definition of additive package.)

Additive Package Number	Components of Additive Package	Concentrations (% or ppm)
1	Diocetyl-Phthalate	100% (A)(W)
	Chlorinated paraffin	100% (A)(W)
	Mixture of penthabromodiphenyl oxide and Aromatic Phosphate	UK
	Tris Phosphate	95%
2	Tetrakis Ethylene Diphosphate	100% (E)(W)
	Antimony Trioxide	99.5%(A)(W)
	Chloroethylene Polymor	99.999%(A)(W)
	Calcium Carbonate	100% (E)(W)
	Ground Limestone	100% (E)(W)
	Barium Sulfate	100% (E)(W)
	Hydrated Alumina	100% (E)(W)

<sup>2</sup>Use the following codes to designate how the concentration was determined:

A = Analytical result  
E = Engineering judgement/calculation

<sup>3</sup>Use the following codes to designate how the concentration was measured:

V = Volume  
W = Weight

☐ Mark (X) this box if you attach a continuation sheet.

---

PART A RESIDUAL TREATMENT PROCESS DESCRIPTION

---

8.01 In accordance with the instructions, provide a residual treatment block flow diagram which describes the treatment process used for residuals identified in question 7.01.

CBI

☐ Process type ..... Flexible Slabstock Polyurethane Foam Manufacturing Process

---

☒ Mark (X) this box if you attach a continuation sheet.

---



## PART B RESIDUAL GENERATION AND CHARACTERIZATION

8.05 Characterize each process stream identified in your residual treatment block flow diagram(s). If a residual treatment block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the instructions for further explanation and an example.)

CBI

☐ Process type ..... Flexible Slabstock Polyurethane Foam Manufacturing Process

a.	b.	c.	d.	e.	f.	g.
Stream ID Code	Type of Hazardous Waste <sup>1</sup>	Physical State of Residual <sup>2</sup>	Known Compounds <sup>3</sup>	Concentrations (% or ppm) <sup>4,5,6</sup>	Other Expected Compounds	Estimated Concentrations (% or ppm)
8.A	N/A	N/A	N/A	N/A	N/A	N/A
8.B	I,T	SY,OL	Methylene Chloride	90% <sup>+</sup>	UK	UK
		SY,OL	Polyol	UK	UK	UK
		SY,OL	TDI	UK	UK	UK
7AA,7FF	N/A	GU	UK	UK	UK	UK
7-R,MM,NN,PP	N/A	GU	UK	UK	UK	UK
RR,TT,RR						
7U	N/A	OL	Meth. Chloride	100	UK	N/A

8.05 continued below

☐ Mark (X) this box if you attach a continuation sheet.

8.06 Characterize each process stream identified in your residual treatment block flow diagram(s). If a residual treatment block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the instructions for further explanation and an example.)

CBI

☐ Process type ..... Flexible Slabstock Polyurethane Manufacturing Process

a.	b.	c.	d.	e.		f.	g.
Stream ID Code	Waste Description Code <sup>1</sup>	Management Method Code <sup>2</sup>	Residual Quantities (kg/yr)	Management of Residual (%)		Costs for Off-Site Management (per kg)	Changes in Management Methods
				On-Site	Off-Site		
TU-8A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8B	A01,B89	M <sup>6</sup>	UK	100%	N/A	N/A	N/A
7AA,FF	B91	M5	UK	100%	N/A	N/A	N/A
7-A,MM,NN	B 91	M5	UK	100%	N/A	N/A	N/A
PP,RR,TT							

<sup>1</sup>Use the codes provided in Exhibit 8-1 to designate the waste descriptions

<sup>2</sup>Use the codes provided in Exhibit 8-2 to designate the management methods

☐ Mark (X) this box if you attach a continuation sheet.

8.22 Describe the combustion chamber design parameters for each of the three largest (by capacity) incinerators that are used on-site to burn the residuals identified in your process block or residual treatment block flow diagram(s).

☐

Incinerator	Combustion Chamber Temperature (°C)		Location of Temperature Monitor		Residence Time In Combustion Chamber (seconds)	
	Primary	Secondary	Primary	Secondary	Primary	Secondary
1						
2						
3						

Indicate if Office of Solid Waste survey has been submitted in lieu of response by circling the appropriate response.

Yes ..... 1  
No ..... 2

8.23 Complete the following table for the three largest (by capacity) incinerators that are used on-site to burn the residuals identified in your process block or residual treatment block flow diagram(s).

☐

Incinerator	Air Pollution Control Device <sup>1</sup>	Types of Emissions Data Available
1	N/A	N/A
2	N/A	N/A
3	N/A	N/A

Indicate if Office of Solid Waste survey has been submitted in lieu of response by circling the appropriate response.

Yes ..... 1  
No ..... 2

<sup>1</sup>Use the following codes to designate the air pollution control device:

S = Scrubber (include type of scrubber in parenthesis)  
E = Electrostatic precipitator  
O = Other (specify) \_\_\_\_\_

☐ Mark (X) this box if you attach a continuation sheet.

9.02 In accordance with the instructions, complete the following table for each activity in which you engage.

CBI

☐

a.	b.	c.	d.	e.
<u>Activity</u>	<u>Process Category</u>	<u>Yearly Quantity (kg)</u>	<u>Total Workers</u>	<u>Total Worker-Hours</u>
Manufacture of the listed substance	Enclosed	N/A	N/A	N/A
	Controlled Release	N/A	N/A	N/A
	Open	N/A	N/A	N/A
On-site use as reactant	Enclosed	2,651,644	1	1960
	Controlled Release	2,651,644	6	11,760
	Open	N/A	N/A	N/A
On-site use as nonreactant	Enclosed	N/A	N/A	N/A
	Controlled Release	N/A	N/A	N/A
	Open	N/A	N/A	N/A
On-site preparation of products	Enclosed	N/A	N/A	N/A
	Controlled Release	N/A	N/A	N/A
	Open	N/A	N/A	N/A

☐ Mark (X) this box if you attach a continuation sheet.

9.03 Provide a descriptive job title for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance.

CBI

☐

Labor Category

Descriptive Job Title

A

Chemist - Department Head/Manager

B

Assistand/Jr. Chemist

C

Compounder

D

Line Operator

E

Chemical Receiver

F

Cut-off saw operator

G

Crane operator

H

I

J

☐ Mark (X) this box if you attach a continuation sheet.

---

9.04 In accordance with the instructions, provide your process block flow diagram(s) and indicate associated work areas.

CBI

☐ Process type ..... Flexible Slabstock Foam Manufacturing Process

---

☒ Mark (X) this box if you attach a continuation sheet.

---

9.05 Describe the various work area(s) shown in question 9.04 that encompass workers who may potentially come in contact with or be exposed to the listed substance. Add any additional areas not shown in the process block flow diagram in question 7.01 or 7.02. Photocopy this question and complete it separately for each process type.

CBI

☐ Process type ..... Flexible Slabstock Foam Manufacturing Foam Process

Work Area ID

Description of Work Areas and Worker Activities

1	Pumping, metering & mixing-(crew operates controls)
2	Side plastic wind ups & cut off saw-(saw operator runs saw)
3	Curing room(crane operator runs crane)
4	Chemical receiving areas (Chemical receiver unloads chemicals)
5	
6	
7	
8	
9	
10	

☐ Mark (X) this box if you attach a continuation sheet.

9.06 Complete the following table for each work area identified in question 9.05, and for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance. Photocopy this question and complete it separately for each process type and work area.

☐ Process type ..... Flexible Slabstock foam Manufacturing Process

Work area ..... 1

Labor Category	Number of Workers Exposed	Mode of Exposure (e.g., direct skin contact)	Physical State of Listed Substance <sup>1</sup>	Average Length of Exposure Per Day <sup>2</sup>	Number of Days per Year Exposed
A,B,C,D	4	Inhalation	GU	D	245
D	1	Direct Skin Contact	OL	A	245

<sup>1</sup>Use the following codes to designate the physical state of the listed substance at the point of exposure:

GC = Gas (condensible at ambient temperature and pressure)  
 GU = Gas (uncondensable at ambient temperature and pressure; includes fumes, vapors, etc.)  
 SO = Solid

SY = Sludge or slurry  
 AL = Aqueous liquid  
 OL = Organic liquid  
 IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

<sup>2</sup>Use the following codes to designate average length of exposure per day:

A = 15 minutes or less  
 B = Greater than 15 minutes, but not exceeding 1 hour  
 C = Greater than one hour, but not exceeding 2 hours

D = Greater than 2 hours, but not exceeding 4 hours  
 E = Greater than 4 hours, but not exceeding 8 hours  
 F = Greater than 8 hours

☒ Mark (X) this box if you attach a continuation sheet.



9.07 For each labor category represented in question 9.06, indicate the 8-hour Time Weighted Average (TWA) exposure levels and the 15-minute peak exposure levels. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type ..... Flexible Slabstock Polyurethane Foam Manufacturing Process

Work area ..... 1

Labor Category	8-hour TWA Exposure Level (ppm, mg/m <sup>3</sup> , other-specify)	15-Minute Peak Exposure Level (ppm, mg/m <sup>3</sup> , other-specify)
A	.002 PPM	.0045 PPM
B	UK	UK
C	.002 PPM	.0025 PPM
D	.003 PPM	.014 PPM

☒ Mark (X) this box if you attach a continuation sheet.

PART B WORK PLACE MONITORING PROGRAM

9.08 If you monitor worker exposure to the listed substance, complete the following table.

CBI

☐

<u>Sample/Test</u>	<u>Work Area ID</u>	<u>Testing Frequency (per year)</u>	<u>Number of Samples (per test)</u>	<u>Who Samples<sup>1</sup></u>	<u>Analyzed In-House (Y/N)</u>	<u>Number of Years Records Maintained</u>
Personal breathing zone	1,2,4	4	6	D	N	30
General work area (air)	N/A	N/A	N/A	N/A	N/A	N/A
Wipe samples	N/A	N/A	N/A	N/A	N/A	N/A
Adhesive patches	N/A	N/A	N/A	N/A	N/A	N/A
Blood samples	N/A	N/A	N/A	N/A	N/A	N/A
Urine samples	N/A	N/A	N/A	N/A	N/A	N/A
Respiratory samples	N/A	N/A	N/A	N/A	N/A	N/A
Allergy tests	N/A	N/A	N/A	N/A	N/A	N/A
Other (specify)						
Pulmonary Function	1,2,4	2	6	E	N	30
Other (specify)						
Physicicals, Yearly	1,2,4	1	6	E	N	30
Other (specify)						
N/A	N/A	N/A	N/A	N/A	N/A	N/A

<sup>1</sup>Use the following codes to designate who takes the monitoring samples:

- A = Plant industrial hygienist
- B = Insurance carrier
- C = OSHA consultant
- D = Other (specify) Corporate Safety Director
- E = Other Hospital Personnel

☐ Mark (X) this box if you attach a continuation sheet.

9.09 For each sample type identified in question 9.08, describe the type of sampling and analytical methodology used for each type of sample.

☐ Sample Type Sampling and Analytical Methodology

Personal Breathing Zone MDA Personal Monitor

Pulmonary Function Hospital Personnel Do Testing (Bi Yearly)

Physicals Yearly Hospital Personnel Do Testing (Yearly)

\_\_\_\_\_

\_\_\_\_\_

9.10 If you conduct personal and/or ambient air monitoring for the listed substance, specify the following information for each equipment type used.

CBI

<input type="checkbox"/> <u>Equipment Type</u> <sup>1</sup>	<u>Detection Limit</u> <sup>2</sup>	<u>Manufacturer</u>	<u>Averaging Time (hr)</u>	<u>Model Number</u>
D	.08 PPM	MDA Scientific	8	4000 MCM
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A

<sup>1</sup>Use the following codes to designate personal air monitoring equipment types:

A = Passive dosimeter

B = Detector tube

C = Charcoal filtration tube with pump

D = Other (specify) Absorbant tape, battery operated pump

Use the following codes to designate ambient air monitoring equipment types:

E = Stationary monitors located within work area

F = Stationary monitors located within facility

G = Stationary monitors located at plant boundary

H = Mobile monitoring equipment (specify) \_\_\_\_\_

I = Other (specify) \_\_\_\_\_

<sup>2</sup>Use the following codes to designate detection limit units:

A = ppm

B = Fibers/cubic centimeter (f/cc)

C = Micrograms/cubic meter ( $\mu\text{m}^3$ )

☐ Mark (X) this box if you attach a continuation sheet.

9.11 If you conduct routine medical tests for monitoring the health effects of exposure to the listed substance, specify the type and frequency of the tests.

CBI

☐

Test Description

Frequency  
(weekly, monthly, yearly, etc.)

Pulmonary Function

Bi yearly

Physicals

Yearly

☐ Mark (X) this box if you attach a continuation sheet.

PART C ENGINEERING CONTROLS

9.12 Describe the engineering controls that you use to reduce or eliminate worker exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type ..... Flexible Slabstock Polyurethane Foam Manufacturing Process

Work area ..... 1

<u>Engineering Controls</u>	<u>Used (Y/N)</u>	<u>Year Installed</u>	<u>Upgraded (Y/N)</u>	<u>Year Upgraded</u>
Ventilation:				
Local exhaust	Y	1970	Y	1982
General dilution	N/A	N/A	N/A	N/A
Other (specify)				
	N/A	N/A	N/A	N/A
Vessel emission controls	N/A	N/A	N/A	N/A
Mechanical loading or packaging equipment	N/A	N/A	N/A	N/A
Other (specify)				
	N/A	N/A	N/A	N/A

☒ Mark (X) this box if you attach a continuation sheet.

9.13 Describe all equipment or process modifications you have made within the 3 years prior to the reporting year that have resulted in a reduction of worker exposure to the listed substance. For each equipment or process modification described, state the percentage reduction in exposure that resulted. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type ..... Flexible Slabstock Polyurethane Foam Manufacturing Process

Work area ..... 1

Equipment or Process Modification	Reduction in Worker Exposure Per Year (%)
Installed Flow meter downstream of TDI	20%
Process metering pump	
Installed fan behind R.S. Unit controls	UK

☒ Mark (X) this box if you attach a continuation sheet.

---

PART D PERSONAL PROTECTIVE AND SAFETY EQUIPMENT

---

9.14 Describe the personal protective and safety equipment that your workers wear or use in each work area in order to reduce or eliminate their exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type ..... Flexible Slabstock Polyurethane Foam Manufacturing Process

Work area ..... 1

<u>Equipment Types</u>	<u>Wear or Use (Y/N)</u>
Respirators	<u>Y</u>
Safety goggles/glasses	<u>Y</u>
Face shields	<u>N</u>
Coveralls	<u>N</u>
Bib aprons	<u>Y</u>
Chemical-resistant gloves	<u>Y</u>
Other (specify)	
_____	_____
_____	_____

---

[X] Mark (X) this box if you attach a continuation sheet.

---

- 9.15 If workers use respirators when working with the listed substance, specify for each process type, the work areas where the respirators are used, the type of respirators used, the average usage, whether or not the respirators were fit tested, and the type and frequency of the fit tests. Photocopy this question and complete it separately for each process type.

CBI

☐ Process type ..... Flexible Slabstock Polyurethane Foam Manufacturing Process

Work Area	Respirator Type	Average Usage <sup>1</sup>	Fit Tested (Y/N)	Type of Fit Test <sup>2</sup>	Frequency of Fit Tests (per year)
<u>1</u>	<u>Half face piece, twin cartridge</u>	<u>A</u>	<u>N</u>	<u>N/A</u>	<u>N/A</u>
<u>2</u>	<u>Half face piece, twin cartridge</u>	<u>E</u>	<u>N</u>	<u>N/A</u>	<u>N/A</u>
<u>3</u>	<u>Half face piece, twin cartridge</u>	<u>E</u>	<u>N</u>	<u>N/A</u>	<u>N/A</u>
<u>4</u>	<u>Half face piece, twin cartridge</u>	<u>E</u>	<u>N</u>	<u>N/A</u>	<u>N/A</u>

<sup>1</sup>Use the following codes to designate average usage:

A = Daily

B = Weekly

C = Monthly

D = Once a year

E = Other (specify) As needed

<sup>2</sup>Use the following codes to designate the type of fit test:

QL = Qualitative

QT = Quantitative

☐ Mark (X) this box if you attach a continuation sheet.



PART E WORK PRACTICES

- 9.19 Describe all of the work practices and administrative controls used to reduce or eliminate worker exposure to the listed substance (e.g., restrict entrance only to authorized workers, mark areas with warning signs, insure worker detection and monitoring practices, provide worker training programs, etc.). Photocopy this question and complete it separately for each process type and work area.

CBI

☐

Process type ..... Flexible Slabstock Polyurethane Foam Manufacturing Process

Work area ..... 1

Respiration Protection

Limited Access

Warning Signs/Posters

Safety Glasses

Worker Training Programs

Disposable Respirators

Exposure Monitoring

For particulates

Safe Operating Procedures

Disposable Aprons

- 9.20 Indicate (X) how often you perform each housekeeping task used to clean up routine leaks or spills of the listed substance. Photocopy this question and complete it separately for each process type and work area.

Process type ..... Flexible Slabstock Polyurethane Foam Manufacturing Process

Work area ..... 1

Housekeeping Tasks	Less Than Once Per Day	1-2 Times Per Day	3-4 Times Per Day	More Than 4 Times Per Day
Sweeping	N/A	x	N/A	N/A
Vacuuming	N/A	N/A	N/A	N/A
Water flushing of floors	N/A	N/A	N/A	N/A
Other (specify)				
N/A				

☒ Mark (X) this box if you attach a continuation sheet.

9.21 Do you have a written medical action plan for responding to routine or emergency exposure to the listed substance?

Routine exposure

Yes ..... 1

No ..... 2

Emergency exposure

Yes ..... 1

No ..... 2

If yes, where are copies of the plan maintained?

Routine exposure: \_\_\_\_\_

Emergency exposure: \_\_\_\_\_

9.22 Do you have a written leak and spill cleanup plan that addresses the listed substance? Circle the appropriate response.

Yes ..... ①

No ..... 2

If yes, where are copies of the plan maintained? In Plant

Has this plan been coordinated with state or local government response organizations? Circle the appropriate response.

Yes ..... ①

No ..... 2

9.23 Who is responsible for monitoring worker safety at your facility? Circle the appropriate response.

Plant safety specialist ..... 1

Insurance carrier ..... 2

OSHA consultant ..... 3

Other (specify) \_\_\_\_\_ 4

☒ Mark (X) this box if you attach a continuation sheet.

---

## SECTION 10 ENVIRONMENTAL RELEASE

---

### General Instructions:

Complete Part E (questions 10.23-10.35) for each non-routine release involving the listed substance that occurred during the reporting year. Report on all releases that are equal to or greater than the listed substance's reportable quantity value, RQ, unless the release is federally permitted as defined in 42 U.S.C. 9601, or is specifically excluded under the definition of release as defined in 40 CFR 302.3(22). Reportable quantities are codified in 40 CFR Part 302. If the listed substance is not a hazardous substance under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and, thus, does not have an RQ, then report releases that exceed 2,270 kg. If such a substance however, is designated as a CERCLA hazardous substance, then report those releases that are equal to or greater than the RQ. The facility may have answered these questions or similar questions under the Agency's Accidental Release Information Program and may already have this information readily available. Assign a number to each release and use this number throughout this part to identify the release. Releases over more than a 24-hour period are not single releases, i.e., the release of a chemical substance equal to or greater than an RQ must be reported as a separate release for each 24-hour period the release exceeds the RQ.

For questions 10.25-10.35, answer the questions for each release identified in question 10.23. Photocopy these questions and complete them separately for each release.

---

### PART A GENERAL INFORMATION

---

10.01 Where is your facility located? Circle all appropriate responses.

#### CBI

- ☐ Industrial area ..... ①
- Urban area ..... 2
- Residential area ..... 3
- Agricultural area ..... 4
- Rural area ..... 5
- Adjacent to a park or a recreational area ..... 6
- Within 1 mile of a navigable waterway ..... 7
- Within 1 mile of a school, university, hospital, or nursing home facility ..... ⑧
- Within 1 mile of a non-navigable waterway ..... 9
- Other (specify) \_\_\_\_\_ ..... 10

---

☐ Mark (X) this box if you attach a continuation sheet.

---

10.02 Specify the exact location of your facility (from central point where process unit is located) in terms of latitude and longitude or Universal Transverse Mercader (UTM) coordinates.

Latitude ..... 41 ° 41 , N/A "

Longitude ..... 85 ° 58 , N/A "

UTM coordinates ..... Zone N/A , Northing N/A , Easting N/A

10.03 If you monitor meteorological conditions in the vicinity of your facility, provide the following information.

Average annual precipitation ..... inches/year

Predominant wind direction .....

10.04 Indicate the depth to groundwater below your facility.

Depth to groundwater ..... meters

10.05 For each on-site activity listed, indicate (Y/N/NA) all routine releases of the listed substance to the environment. (Refer to the instructions for a definition of CBI Y, N, and NA.)

On-Site Activity	Environmental Release		
	Air	Water	Land
Manufacturing	N/A	N/A	N/A
Importing	N/A	N/A	N/A
Processing	Y	N	N
Otherwise used	N/A	N/A	N/A
Product or residual storage	Y	N	N
Disposal	N/A	N/A	N/A
Transport	N/A	N/A	N/A

☐ Mark (X) this box if you attach a continuation sheet.

10.06 Provide the following information for the listed substance and specify the level of precision for each item. (Refer to the instructions for further explanation and an example.)

CBI

☐

Quantity discharged to the air ..... UK kg/yr ± \_\_\_\_ %

Quantity discharged in wastewaters ..... N/A kg/yr ± \_\_\_\_ %

Quantity managed as other waste in on-site treatment, storage, or disposal units ..... N/A kg/yr ± \_\_\_\_ %

Quantity managed as other waste in off-site treatment, storage, or disposal units ..... N/A kg/yr ± \_\_\_\_ %

☐ Mark (X) this box if you attach a continuation sheet.

10.08 Describe the control technologies used to minimize release of the listed substance for each process stream containing the listed substance as identified in your process block or residual treatment block flow diagram(s). Photocopy this question and complete it separately for each process type.

CBI

☐ Process type ..... Flexible Slabstock Polyurethaen Foam Manufacturing Process

<u>Stream ID Code</u>	<u>Control Technology</u>	<u>Percent Efficiency</u>
7AA - 7LL	Closed Loop System	UK
7LL	Auto - shut off	UK
7AA	Over-fill catch basin	UK
7AA - 7LL	Compatible Equipment	UK
7EE	Float Control	UK

☐ Mark (X) this box if you attach a continuation sheet.

PART B RELEASE TO AIR

- 10.09 Point Source Emissions -- Identify each emission point source containing the listed substance in terms of a Stream ID Code as identified in your process block or residual treatment block flow diagram(s), and provide a description of each point source. Do not include raw material and product storage vents, or fugitive emission sources (e.g., equipment leaks). Photocopy this question and complete it separately for each process type.

CBI

☐

Process type ..... Flexible Slabstock Polyurethane Foam Manufacturing Process

Point Source  
ID Code

Description of Emission Point Source

7P	Mix head flush
7R	Vent fan for reaction zone
7MM	Vent fan for conveyor
7NN	Vent fan for conveyor
7PP	Vent fan for side heaters
7RR	Vent fan for cut-off saw
7TT	Vent fan for conveyor

☐ Mark (X) this box if you attach a continuation sheet.

☐ Mark (X) this box if you attach a continuation sheet.

10.10 Emission Characteristics -- Characterize the emissions for each Point Source ID Code identified in question 10.09 by completing the following table.

CBI

<input type="checkbox"/> Point Source ID Code	Physical State <sup>1</sup>	Average Emissions (kg/day)	Frequency <sup>2</sup> (days/yr)	Duration <sup>3</sup> (min/day)	Average Emission Factor <sup>4</sup>	Maximum Emission Rate (kg/min)	Maximum Emission Rate Frequency (events/yr)	Maximum Emission Rate Duration (min/event)
7P	O	UK	245	N/A	UK	UK	UK	UK
7R	V	UK	245	131	UK	UK	UK	UK
7MM	V	UK	245	131	UK	UK	UK	UK
7NN	V	UK	245	131	UK	UK	UK	UK
7PP	V	UK	245	131	UK	UK	UK	UK
7RR	V	UK	245	131	UK	UK	UK	UK
7TT	V	UK	245	131	UK	UK	UK	UK

<sup>1</sup>Use the following codes to designate physical state at the point of release:

G = Gas; V = Vapor; P = Particulate; A = Aerosol; O = Other (specify) liquid

<sup>2</sup>Frequency of emission at any level of emission

<sup>3</sup>Duration of emission at any level of emission

<sup>4</sup>Average Emission Factor -- Provide estimated ( $\pm$  25 percent) emission factor (kg of emission per kg of production of listed substance)



10.11 Stack Parameters -- Identify the stack parameters for each Point Source ID Code identified in question 10.09 by completing the following table.

CBI

☐

Point Source ID Code	Stack Height(m)	Stack Inner Diameter (at outlet) (m)	Exhaust Temperature (°C)	Emission Exit Velocity (m/sec)	Building Height(m) <sup>1</sup>	Building Width(m) <sup>2</sup>	Vent Type <sup>3</sup>
7R	10.68	0.46	25 C	8.7	6.10	30.5	V
7MM	10.68	0.46	25 C	10.9	6.10	30.5	V
7MM	10.68	0.61	25 C	13.2	6.10	30.5	V
7NN	10.68	0.31	25 C	7.0	6.10	30.5	V
7PP	10.68	0.61	25 C	9.6	6.10	30.5	V
7RR	10.68	0.46	25 C	11.9	6.10	30.5	V
7TT	10.68	0.61	25 C	15.8	6.10	30.5	V
7TT	10.68	0.61	25 C	15.7	6.10	30.5	V

<sup>1</sup>Height of attached or adjacent building

<sup>2</sup>Width of attached or adjacent building

<sup>3</sup>Use the following codes to designate vent type:

H = Horizontal

V = Vertical

☐ Mark (X) this box if you attach a continuation sheet.

10.12 If the listed substance is emitted in particulate form, indicate the particle size distribution for each Point Source ID Code identified in question 10.09. Photocopy this question and complete it separately for each emission point source.

CBI

☐

Point source ID code ..... N/A

Size Range (microns)

Mass Fraction (% ± % precision)

< 1

N/A

≥ 1 to < 10

N/A

≥ 10 to < 30

N/A

≥ 30 to < 50

N/A

≥ 50 to < 100

N/A

≥ 100 to < 500

N/A

≥ 500

Total = 100%

☐ Mark (X) this box if you attach a continuation sheet.

PART C FUGITIVE EMISSIONS

10.13 Equipment Leaks -- Complete the following table by providing the number of equipment types listed which are exposed to the listed substance and which are in service according to the specified weight percent of the listed substance passing through the component. Do this for each process type identified in your process block or residual treatment block flow diagram(s). Do not include equipment types that are not exposed to the listed substance. If this is a batch or intermittently operated process, give an overall percentage of time per year that the process type is exposed to the listed substance. Photocopy this question and complete it separately for each process type.

CBI

☐ Process type ..... Flexible Slabstock Polyurethane Foam Manufacturing Process  
Percentage of time per year that the listed substance is exposed to this process type ..... 100 %

Equipment Type	Number of Components in Service by Weight Percent of Listed Substance in Process Stream					Greater than 99%
	Less than 5%	5-10%	11-25%	26-75%	76-99%	
Pump seals <sup>1</sup>						
Packed	N/A	N/A	N/A	N/A	N/A	2
Mechanical	N/A	N/A	N/A	N/A	N/A	2
Double mechanical <sup>2</sup>	N/A	N/A	N/A	N/A	N/A	N/A
Compressor seals <sup>1</sup>	N/A	N/A	N/A	N/A	N/A	N/A
Flanges	N/A	N/A	N/A	N/A	N/A	24
Valves						
Gas <sup>3</sup>	N/A	N/A	N/A	N/A	N/A	N/A
Liquid	N/A	N/A	N/A	N/A	N/A	40
Pressure relief devices <sup>4</sup> (Gas or vapor only)	N/A	N/A	N/A	N/A	N/A	N/A
Sample connections						
Gas	N/A	N/A	N/A	N/A	N/A	N/A
Liquid	N/A	N/A	N/A	N/A	N/A	4
Open-ended lines <sup>5</sup> (e.g., purge, vent)						
Gas	N/A	N/A	N/A	N/A	N/A	N/A
Liquid	N/A	N/A	N/A	N/A	N/A	4

<sup>1</sup>List the number of pump and compressor seals, rather than the number of pumps or compressors

10.13 continued on next page

☐ Mark (X) this box if you attach a continuation sheet.

10.13 (continued)

<sup>2</sup> If double mechanical seals are operated with the barrier (B) fluid at a pressure greater than the pump stuffing box pressure and/or equipped with a sensor (S) that will detect failure of the seal system, the barrier fluid system, or both, indicate with a "B" and/or an "S", respectively

<sup>3</sup> Conditions existing in the valve during normal operation

<sup>4</sup>Report all pressure relief devices in service, including those equipped with control devices

<sup>5</sup>Lines closed during normal operation that would be used during maintenance operations

10.14 Pressure Relief Devices with Controls -- Complete the following table for those pressure relief devices identified in 10.13 to indicate which pressure relief devices in service are controlled. If a pressure relief device is not controlled, enter "None" under column c.

[ ]

[illegible]

<sup>1</sup>Refer to the table in question 10.13 and record the percent range given under the heading entitled "Number of Components in Service by Weight Percent of Listed Substance" (e.g., <5%, 5-10%, 11-25%, etc.)

<sup>2</sup> The EPA assigns a control efficiency of 100 percent for equipment leaks controlled with rupture discs under normal operating conditions. The EPA assigns a control efficiency of 98 percent for emissions routed to a flare under normal operating conditions

☐ Mark (X) this box if you attach a continuation sheet.

10.15 Equipment Leak Detection -- If a formal leak detection and repair program is in place, complete the following table regarding those leak detection and repair procedures. Photocopy this question and complete it separately for each process type.

CBI

☐ Process type ..... N/A

Equipment Type	Leak Detection Concentration (ppm or mg/m <sup>3</sup> ) Measured at Inches from Source	Detection Device <sup>1</sup>	Frequency of Leak Detection (per year)	Repairs Initiated (days after detection)	Repairs Completed (days after initiated)
Pump seals					
Packed	N/A	N/A	N/A	N/A	N/A
Mechanical	N/A	N/A	N/A	N/A	N/A
Double mechanical	N/A	N/A	N/A	N/A	N/A
Compressor seals	N/A	N/A	N/A	N/A	N/A
Flanges	N/A	N/A	N/A	N/A	N/A
Valves					
Gas	N/A	N/A	N/A	N/A	N/A
Liquid	N/A	N/A	N/A	N/A	N/A
Pressure relief devices (gas or vapor only)	N/A	N/A	N/A	N/A	N/A
Sample connections					
Gas	N/A	N/A	N/A	N/A	N/A
Liquid	N/A	N/A	N/A	N/A	N/A
Open-ended lines					
Gas	N/A	N/A	N/A	N/A	N/A
Liquid	N/A	N/A	N/A	N/A	N/A

<sup>1</sup>Use the following codes to designate detection device:

POVA = Portable organic vapor analyzer

FPM = Fixed point monitoring

0 = Other (specify) \_\_\_\_\_

☐ Mark (X) this box if you attach a continuation sheet.

10.16 Raw Material, Intermediate and Product Storage Emissions - - Complete the following table by providing the information on each liquid raw material, intermediate, and product storage vessel containing the listed substance as identified in your process block or residual treatment block flow diagram(s).

CBI

☐

Vessel Type <sup>1</sup>	Floating Roof Seals <sup>2</sup>	Composition of Stored Materials <sup>3</sup>	Throughput (liters per year)	Vessel Filling Rate (gpm)	Vessel Filling Duration (min)	Vessel Inner Diameter (m)	Vessel Height (m)	Vessel Volume (l)	Operating Vessel Emission Controls <sup>4</sup>	Design Flow Rate <sup>5</sup>	Vent Diameter (cm)	Control Efficiency (%)	Basis for Estimate <sup>6</sup>
F	N/A	100%	546019	100	65.5	3.66	3.05	24794	N/A	N/A	5.1	N/A	N/A
F	N/A	100%	546019	100	63.3	3.66	3.20	23942	N/A	N/A	5.1	N/A	N/A
F	N/A	100%	546019	100	66.2	3.20	3.66	25059	N/A	N/A	5.1	N/A	N/A
F	N/A	100%	546019	100	66.2	3.20	3.66	25059	N/A	N/A	5.1	N/A	N/A

<sup>1</sup>Use the following codes to designate vessel type:

F = Fixed roof  
 CIF = Contact internal floating roof  
 NCIF = Noncontact internal floating roof  
 EFR = External floating roof  
 P = Pressure vessel (indicate pressure rating)  
 H = Horizontal  
 U = Underground

<sup>2</sup>Use the following codes to designate floating roof seals:

MS1 = Mechanical shoe, primary  
 MS2 = Shoe-mounted secondary  
 MS2R = Rim-mounted, secondary  
 LM1 = Liquid-mounted resilient filled seal, primary  
 LM2 = Rim-mounted shield  
 LMW = Weather shield  
 VM1 = Vapor mounted resilient filled seal, primary  
 VM2 = Rim-mounted secondary  
 VMW = Weather shield

<sup>3</sup>Indicate weight percent of the listed substance. Include the total volatile organic content in parenthesis

<sup>4</sup>Other than floating roofs

<sup>5</sup>Gas/vapor flow rate the emission control device was designed to handle (specify flow rate units)

<sup>6</sup>Use the following codes to designate basis for estimate of control efficiency:

C = Calculations  
 S = Sampling

---

PART E NON-ROUTINE RELEASES

---

10.23 Indicate the date and time when the release occurred and when the release ceased or was stopped. If there were more than six releases, attach a continuation sheet and list all releases.

<u>Release</u>	<u>Date Started</u>	<u>Time (am/pm)</u>	<u>Date Stopped</u>	<u>Time (am/pm)</u>
<u>1</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
<u>2</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
<u>3</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
<u>4</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
<u>5</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
<u>6</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>

---

10.24 Specify the weather conditions at the time of each release.

<u>Release</u>	<u>Wind Speed (km/hr)</u>	<u>Wind Direction</u>	<u>Humidity (%)</u>	<u>Temperature (°C)</u>	<u>Precipitation (Y/N)</u>
<u>1</u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>2</u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>3</u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>4</u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>5</u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>6</u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>

---

☐ Mark (X) this box if you attach a continuation sheet.

---

# APPENDIX I: List of Continuation Sheets

Attach continuation sheets for sections of this form and optional information after this page. In column 1, clearly identify the continuation sheet by listing the question number to which it relates. In column 2, enter the inclusive page numbers of the continuation sheet for each question number.

Question Number (1)	Continuation Sheet Page Numbers (2)
4.02	25-A,B,C,D,E,F,G
7.01	42 - A
7.03	44 - A
7.04	45 - A,B
7.05	46 - A
7.06	47 - A
8.01	50 - A
9.04	91 - A
9.06	93 - A,B,C
9.07	94 - A,B,C
9.12	98 - A,B,C
9.13	99 - A,B,C
9.14	100 - A,B,C
9.19	105 - A,B,C
9.22	106 - A

☐ Mark (X) this box if you attach a continuation sheet.



# M A T E R I A L   S A F E T Y   D A T A   S H E E T

Dow Chemical U.S.A.\*   Midland, MI 48674   Emergency Phone: 517-636-4400

Product Code: 92097   Page: 1  
PRODUCT NAME: VORANATE (R) T-80 TYPE I TOLUENE DIISOCYANATE

Effective Date: 12/13/88   Date Printed: 05/03/89   MSD: 000609

## 1. INGREDIENTS: (% w/w, unless otherwise noted)

Toluene-2,4-diisocyanate (TDI)	CAS# 000584-84-9	80%
Toluene-2,6-diisocyanate	CAS# 000091-08-7	20%

This document is prepared pursuant to the OSHA Hazard Communication Standard (29 CFR 1910.1200). In addition, other substances not 'Hazardous' per this OSHA Standard may be listed. Where proprietary ingredient shows, the identity may be made available as provided in this standard.

## 2. PHYSICAL DATA:

BOILING POINT: 250C (482F)  
VAP PRESS: 0.01 mmHg @ 20C  
VAP DENSITY: 6.0  
SOL. IN WATER: Insoluble  
SP. GRAVITY: 1.22 @ 25/15.5C  
APPEARANCE: Water white to pale yellow liquid.  
ODOR: Sharp pungent odor.

## 3. FIRE AND EXPLOSION HAZARD DATA:

FLASH POINT: 127C (260F)  
METHOD USED: PMCC, ASTM D-93

### FLAMMABLE LIMITS

LFL: Not determined  
UFL: Not determined

EXTINGUISHING MEDIA: Carbon dioxide, dry chemical, or foam.  
If water is used, it should be in very large quantity.  
The reaction between water and hot isocyanate may be vigorous.

FIRE & EXPLOSION HAZARDS: Down-wind personnel must be evacuated.  
Do not reseal contaminated containers since pressure build-up may cause rupture. Fire point: 146C (295F).

FIRE-FIGHTING EQUIPMENT: People who are fighting isocyanate fires must be protected against nitrogen oxide fumes and isocyanate vapors by wearing positive pressure self-contained breathing

(Continued on Page 2)

(R) Indicates a Trademark of The Dow Chemical Company

\* An Operating Unit Of The Dow Chemical Company

M A T E R I A L   S A F E T Y   D A T A   S H E E T

Dow Chemical U.S.A.\*   Midland, MI 48674   Emergency Phone: 517-636-4400

Product Code: 92097

Page: 2

PRODUCT NAME: VORANATE (R) T-80 TYPE I TOLUENE DIISOCYANATE

Effective Date: 12/13/88

Date Printed: 05/03/89

MSD: 000609

3. FIRE AND EXPLOSION HAZARD DATA: (CONTINUED)

apparatus and full protective clothing.

4. REACTIVITY DATA:

STABILITY: (CONDITIONS TO AVOID). Stable when stored under recommended storage conditions. Store in a dry place at temperatures between 18-41C (65-105F).

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) Water, acid, base, alcohols, metal compounds, surface active materials. Avoid water as it reacts to form heat, CO<sub>2</sub> and insoluble urea. The combined effect of the CO<sub>2</sub> and heat can produce enough pressure to rupture a closed container.

HAZARDOUS DECOMPOSITION PRODUCTS: Isocyanate vapor and mist, carbon dioxide, carbon monoxide, nitrogen oxides and traces of hydrogen cyanide.

HAZARDOUS POLYMERIZATION: May occur with incompatible reactants, especially strong bases, water or temperatures over 41C (105F).

5. ENVIRONMENTAL AND DISPOSAL INFORMATION:

ACTION TO TAKE FOR SPILLS/LEAKS:

Evacuate and ventilate spill area, dike spill to prevent entry into water system, wear full protective equipment including respiratory equipment during clean up.

Major spill: Call Dow Chemical U.S.A. (409) 238-2112. If transportation spill involved call CHEMTREC (800) 424-9300. If temporary control of isocyanate vapor is required a blanket of protein foam (available at most fire departments) may be placed over the spill. Large quantities may be pumped into closed but not sealed containers for disposal.

Minor spill: Absorb the isocyanate with sawdust or other absorbent and shovel into open top containers. Do not make pressure tight. Transport to a well-ventilated area (outside) and treat with neutralizing solution consisting of a mixture of

(Continued on Page 3)

(R) Indicates a Trademark of The Dow Chemical Company

\* An Operating Unit Of The Dow Chemical Company

M A T E R I A L   S A F E T Y   D A T A   S H E E T

Dow Chemical U.S.A.\*   Midland, MI 48674   Emergency Phone: 517-636-4400

Product Code: 92097   Page: 3  
PRODUCT NAME: VORANATE (R) T-80 TYPE I TOLUENE DIISOCYANATE

Effective Date: 12/13/88   Date Printed: 05/03/89   MSD: 000609

5. ENVIRONMENTAL AND DISPOSAL INFORMATION: (CONTINUED)

water and 3-8% concentrated ammonium hydroxide or 5-10% sodium carbonate. Add about 10 parts of neutralizer per part of isocyanate with mixing. Allow to stand for 48 hours letting evolved carbon dioxide to escape.

Clean-up: Decontaminate floor using water/ammonia solution with 1-2% added detergent letting stand over affected area for at least 10 minutes. Cover mops and brooms used for this with plastic and dispose properly (often by incineration).

DISPOSAL METHOD: Follow all federal, state and local regulations. Liquids are usually incinerated in a proper facility. Solids are usually also incinerated or landfilled. Empty drums should be filled with water. Let drum stand unsealed for 48 hours. Before disposal drums should be drained, triple rinsed, and holed to prevent reuse. Dispose of drain and rinse fluid according to federal, state and local laws and regulations. The most commonly accepted method is in an approved wastewater treatment facility. Drums should be disposed of in accordance with federal, state and local laws and regulations. Commonly accepted methods for disposal of plastic drums are disposal in an approved landfill after shredding or incineration in an approved industrial incinerator or other appropriate incinerator facility. Steel drums are commonly disposed in an approved landfill after crushing or in accordance with other approved procedures.

6. HEALTH HAZARD DATA:

EYE: May cause pain, severe eye irritation and moderate corneal injury. Vapors may irritate eyes.

SKIN CONTACT: Prolonged or repeated exposure may cause severe irritation, even a burn. Skin contact may result in allergic reaction even though it is not expected to result in absorption of amounts sufficient to cause other adverse effects.

SKIN ABSORPTION: ~The LD50 for skin absorption in rabbits is >9400 mg/kg.

(Continued on Page 4)

(R) Indicates a Trademark of The Dow Chemical Company

\* An Operating Unit Of The Dow Chemical Company

M A T E R I A L   S A F E T Y   D A T A   S H E E T

Dow Chemical U.S.A.\* Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 92097

Page: 4

PRODUCT NAME: VORANATE (R) T-80 TYPE I TOLUENE DIISOCYANATE

Effective Date: 12/13/88 Date Printed: 05/03/89

MSD: 000609

6. HEALTH HAZARD DATA: (CONTINUED)

INGESTION: Single dose oral toxicity is low. The oral LD50 for rats is 5800 mg/kg. Ingestion may cause gastrointestinal irritation or ulceration.

INHALATION: Excessive vapor concentrations are attainable and could be hazardous on single exposure. Single and repeated excessive exposure may cause severe irritation to upper respiratory tract and lungs (choking sensation, chest tightness), respiratory sensitization, decreased ventilatory capacity, liver effects, cholinesterase depression, gastrointestinal distress and/or neurologic disorders. The 4-hour LC50 for TDI for rats is 13.9 ppm.

SYSTEMIC & OTHER EFFECTS: Based on available data, repeated exposures are not anticipated to cause any additional significant adverse effects. For hazard communication purposes under OSHA standard 29 CFR Part 1910.1200, this chemical is listed as a potential carcinogen by Nat'l. Tox. Program and IARC. An oral study in which high doses of TDI were reported to cause cancer in animals has been found to contain numerous deficiencies which compromise the validity of the study. TDI did not cause cancer in laboratory animals exposed by inhalation, the most likely route of exposure. Birth defects are unlikely. Exposures having no effect on the mother should have no effect on the fetus. Did not cause birth defects in animals; other effects were seen in the fetus only at doses which caused toxic effects to the mother. Results of in vitro ("test tube") mutagenicity tests have been inconclusive.

7. FIRST AID:

EYES: Irrigate with flowing water immediately and continuously for 15 minutes. Consult medical personnel.

SKIN: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician if irritation persists. Wash clothing before reuse. Destroy contaminated shoes.

INGESTION: Do not induce vomiting. Call a physician and/or

(Continued on Page 5)

(R) Indicates a Trademark of The Dow Chemical Company

\* An Operating Unit Of The Dow Chemical Company

M A T E R I A L   S A F E T Y   D A T A   S H E E T

Dow Chemical U.S.A.\*   Midland, MI 48674   Emergency Phone: 517-636-4400

Product Code: 92097

Page: 5

PRODUCT NAME: VORANATE (R) T-80 TYPE I TOLUENE DIISOCYANATE

Effective Date: 12/13/88   Date Printed: 05/03/89

MSD: 000609

7. FIRST AID: (CONTINUED)

transport to emergency facility immediately.

INHALATION: Remove to fresh air. If not breathing, give mouth-to-mouth resuscitation. If breathing is difficult, give oxygen. Call a physician.

NOTE TO PHYSICIAN: May cause tissue destruction leading to stricture. If lavage is performed, suggest endotracheal and/or esophagosopic control. If burn is present, treat as any thermal burn, after decontamination. No specific antidote. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient. The manifestations of the respiratory symptoms, including pulmonary edema, resulting from acute exposure may be delayed. May cause respiratory sensitization. Cholinesterase inhibition has been noted in human exposure but is not of benefit in determining exposure and is not correlated with signs of exposure.

8. HANDLING PRECAUTIONS:

EXPOSURE GUIDELINE(S): OSHA PEL is 0.02 ppm as a ceiling limit for toluene 2,4-diisocyanate. ACGIH TLV is 0.005 ppm; 0.02 ppm STEL for toluene 2,4-diisocyanate. Dow Industrial Hygiene Guide is 0.02 ppm as a ceiling limit for toluene diisocyanate.

VENTILATION: Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines.

RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required for certain operations, use an approved supplied-air respirator. For emergency and other conditions where the exposure guideline may be greatly exceeded, use an approved positive-pressure self-contained breathing apparatus.

SKIN PROTECTION: Use protective clothing impervious to this material. Selection of specific items such as gloves, boots, apron, or full-body suit will depend on operation. Remove contaminated clothing immediately, wash skin area with soap and water, and launder clothing before reuse. Safety shower should

(Continued on Page 6)

(R) Indicates a Trademark of The Dow Chemical Company

\* An Operating Unit Of The Dow Chemical Company

M A T E R I A L   S A F E T Y   D A T A   S H E E T

Dow Chemical U.S.A.\* Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 92097 Page: 6  
PRODUCT NAME: VORANATE (R) T-80 TYPE I TOLUENE DIISOCYANATE

Effective Date: 12/13/88 Date Printed: 05/03/89 MSD: 000609

8. HANDLING PRECAUTIONS: (CONTINUED)

be located in immediate work area.

EYE PROTECTION: Use chemical goggles. If vapor exposure causes eye irritation, use a full-face, supplied-air respirator. Eye wash fountain should be located in immediate work area.

9. ADDITIONAL INFORMATION:

REGULATORY REQUIREMENTS:

SARA HAZARD CATEGORY: This product has been reviewed according to the EPA 'Hazard Categories' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

An immediate health hazard  
A delayed health hazard  
A reactive hazard

SPECIAL PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Warning properties of this material (irritation of eyes, nose and throat) not adequate to prevent chronic overexposure from inhalation. This material can produce asthmatic sensitization upon either single inhalation exposure to a relatively high concentration or upon repeated inhalation exposure to lower concentrations. Exposures to vapors of heated TDI can be extremely dangerous. (Have TDI neutralizer available for spills.)

MSDS STATUS: Revised Section 9

SARA 313 INFORMATION:

This product contains the following substances subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

(Continued on Page 7)

(R) Indicates a Trademark of The Dow Chemical Company

\* An Operating Unit Of The Dow Chemical Company

# M A T E R I A L   S A F E T Y   D A T A   S H E E T

Dow Chemical U.S.A.\* Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 92097 Page: 7  
 PRODUCT NAME: VORANATE (R) T-80 TYPE I TOLUENE DIISOCYANATE

Effective Date: 12/13/88 Date Printed: 05/03/89 MSD: 000609

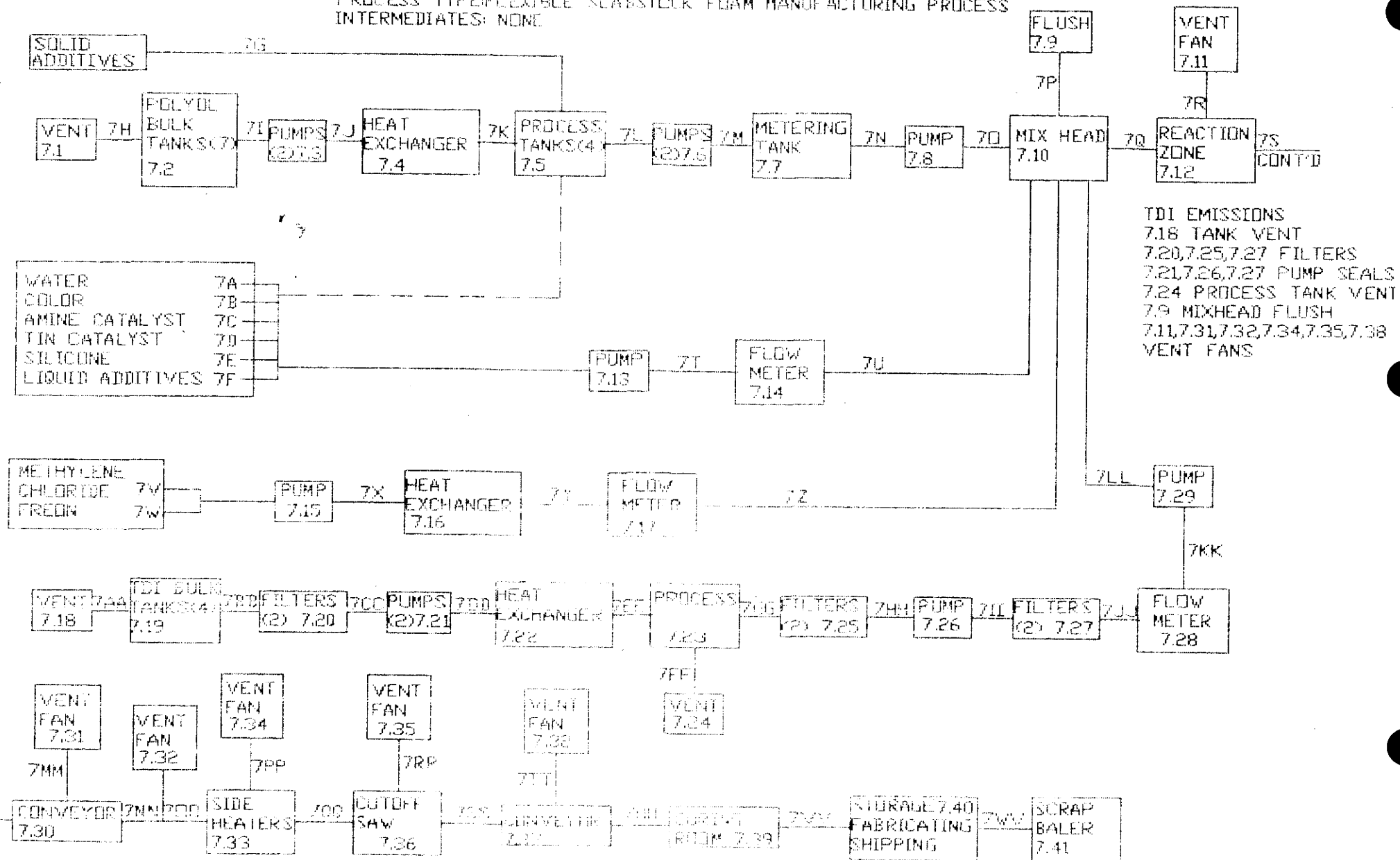
## 9. ADDITIONAL INFORMATION: (CONTINUED)

CHEMICAL NAME	CAS NUMBER	CONCENTRATION
TOLUENE-2,6-DIISOCYANATE	000091-08-7	20 %
TOLUENE-2,4-DIISOCYANATE	000584-84-9	80 %

(R) Indicates a Trademark of The Dow Chemical Company  
 The Information Herein Is Given In Good Faith, But No Warranty,  
 Express Or Implied, Is Made. Consult The Dow Chemical Company  
 For Further Information.

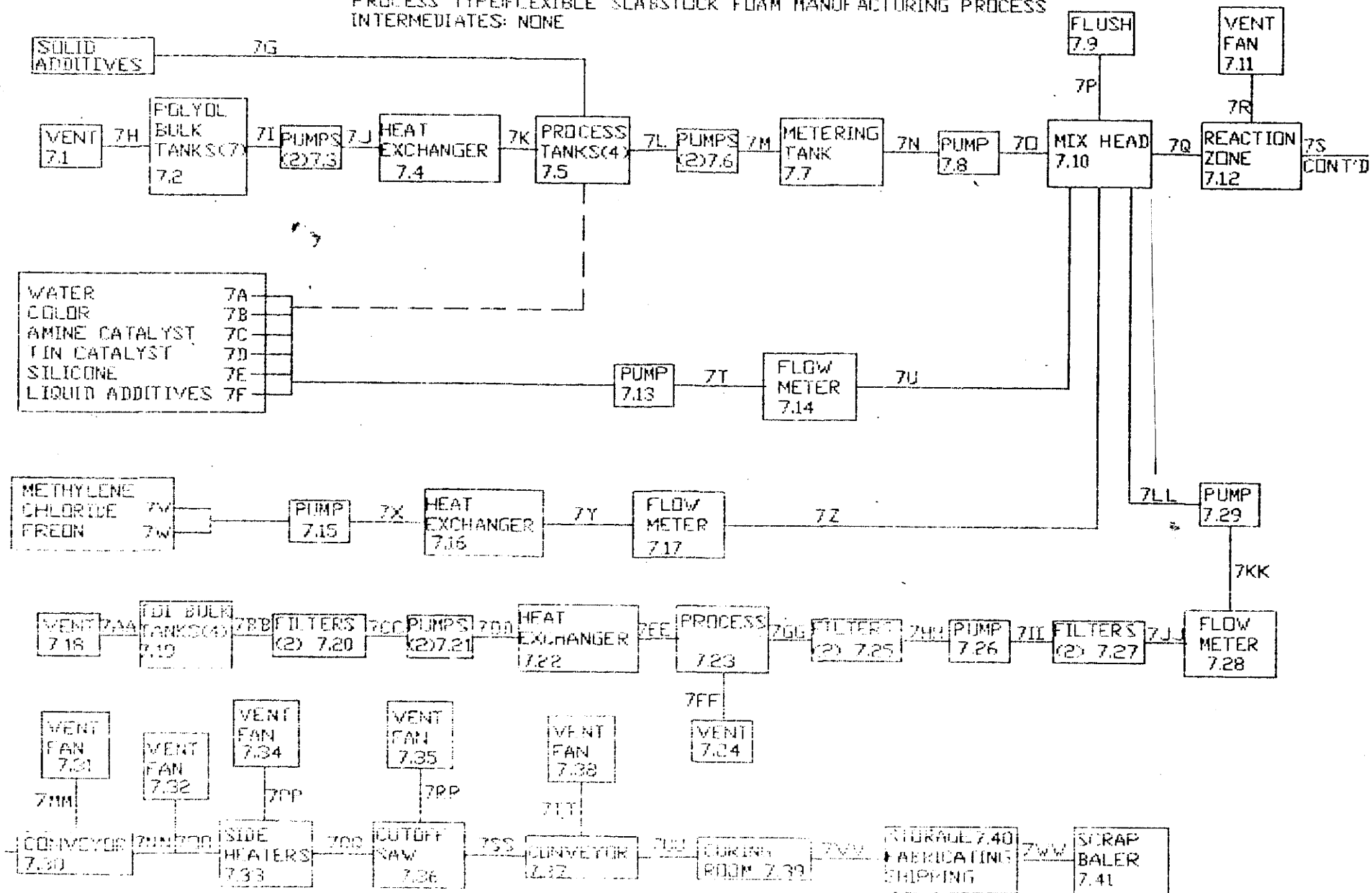
\* An Operating Unit Of The Dow Chemical Company

PROCESS TYPE: FLEXIBLE SLAB STOCK FOAM MANUFACTURING PROCESS  
INTERMEDIATES: NONE





PROCESS TYPE: FLEXIBLE SLAB STOCK FOAM MANUFACTURING PROCESS  
INTERMEDIATES: NONE



7.04 Describe the typical equipment types for each unit operation identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type.

CBI

☐ Process type ..... Flexible Slabstock Polyurethane Foam Manufacturer Process

<u>Unit Operation ID Number</u>	<u>Typical Equipment Type</u>	<u>Operating Temperature Range (°C)</u>	<u>Operating Pressure Range (mm Hg)</u>	<u>Vessel Composition</u>
7.18	Vents (4)	Ambient	Atmospheric	Steel
7.19	TDI Bulk Tanks (4)	Ambient	Atmospheric	Steel
7.20	Filters-Y-Strainers(2)	Ambient	< 1000	Steel
7.21	Gear Pumps (2)	Ambient	< 1600	Steel
7.22	Plate Heat Exchanger	18-24	< 1600	Steel
7.23	Process/Holding Tank	18-24	Atmospheric	Steel
7.24	Vent	Ambient	Atmospheric	Steel
7.25	Filters-Y-Strainers(2)	18-24	< 1000	Steel
7.26	Centrif Pump-Booster (2)	18-24	< 2600	Steel
7.27	Filters-Blade Canisters	18-24	< 2600	Steel
7.28	Flow Meters (2) 1 - Fluid 1 - Digital	18-24 18-24	< 2600 31,000-62,000	Glass/Steel Steel
7.29	High Pressure Pump	18-24	31,000-62,000	Steel
7.30	Slat Conveyor with moving side walls	120	Atmospheric	Aluminum
7.31	Vent Fans	Ambient	Atmospheric	Steel
7.32	Vent Fan	Ambient	Atmospheric	Steel
7.33	Side Heatings	100	Atmospheric	N/A
7.34	Vent Fans	Ambient	Atmospheric	Steel
7.35	Vent Fans	Ambient	Atmospheric	Steel

☐ Mark (X) this box if you attach a continuation sheet.

7.04 Describe the typical equipment types for each unit operation identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type.

CBI

☐ Process type ..... Flexible Slabstock Polyurethane Foam Manufacturer Process

<u>Unit Operation ID Number</u>	<u>Typical Equipment Type</u>	<u>Operating Temperature Range (°C)</u>	<u>Operating Pressure Range (mm Hg)</u>	<u>Vessel Composition</u>
<u>7.36</u>	<u>Traveling Cut-off saw</u>	<u>Ambient</u>	<u>Atmospheric</u>	<u>N/A</u>
<u>7.37</u>	<u>Belt Conveyor</u>	<u>120</u>	<u>Atmospheric</u>	<u>Fabric/Steel</u>
<u>7.38</u>	<u>Vent Fans</u>	<u>Ambient</u>	<u>Atmospheric</u>	<u>Steel</u>
<u>7.39</u>	<u>Curing/Crain room</u>	<u>Ambient</u>	<u>Atmospheric</u>	<u>N/A</u>
<u>7.40</u>	<u>Storage, Fabricating Shipping rooms</u>	<u>Ambient</u>	<u>Atmospheric</u>	<u>N/A</u>
<u>7.41</u>	<u>Foam Shredder/Baler</u>	<u>Ambient</u>	<u>N/A</u>	<u>N/A</u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>

☐ Mark (X) this box if you attach a continuation sheet.

7.05 Describe each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type.

CBI

☐ Process type ..... Flexible Slabstock Polyurethane Foam Manufacturer Process

Process Stream ID Code	Process Stream Description	Physical State <sup>1</sup>	Stream Flow (kg/yr)
7-F,T,U(L,M,N,O,P)	Liquid Additives	OL	116,180
7-G,L,M,N,O,P	Solid Additives	SO	556,325
7-V,X,Y,Z,P	M/C	OL	212,605
7,W,X,Y,Z,P	Freon	OL	65,728
7-P,Q,S,OO,QQ,SS,UU VV,WW	Polyurethane Foam	SO	9,490,998
7-H,R,AA,FF,MM,NN PP,RR,TT	ventilation	GU	N/A

<sup>1</sup>Use the following codes to designate the physical state for each process stream:

GC = Gas (condensable at ambient temperature and pressure)  
 GU = Gas (uncondensable at ambient temperature and pressure)  
 SO = Solid  
 SY = Sludge or slurry  
 AL = Aqueous liquid  
 OL = Organic liquid  
 IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

☐ Mark (X) this box if you attach a continuation sheet.

7.06 Characterize each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the CBI instructions for further explanation and an example.)

☐ Process type ..... Flexible Slabstock Polyurethane Foam Manufacturer Process

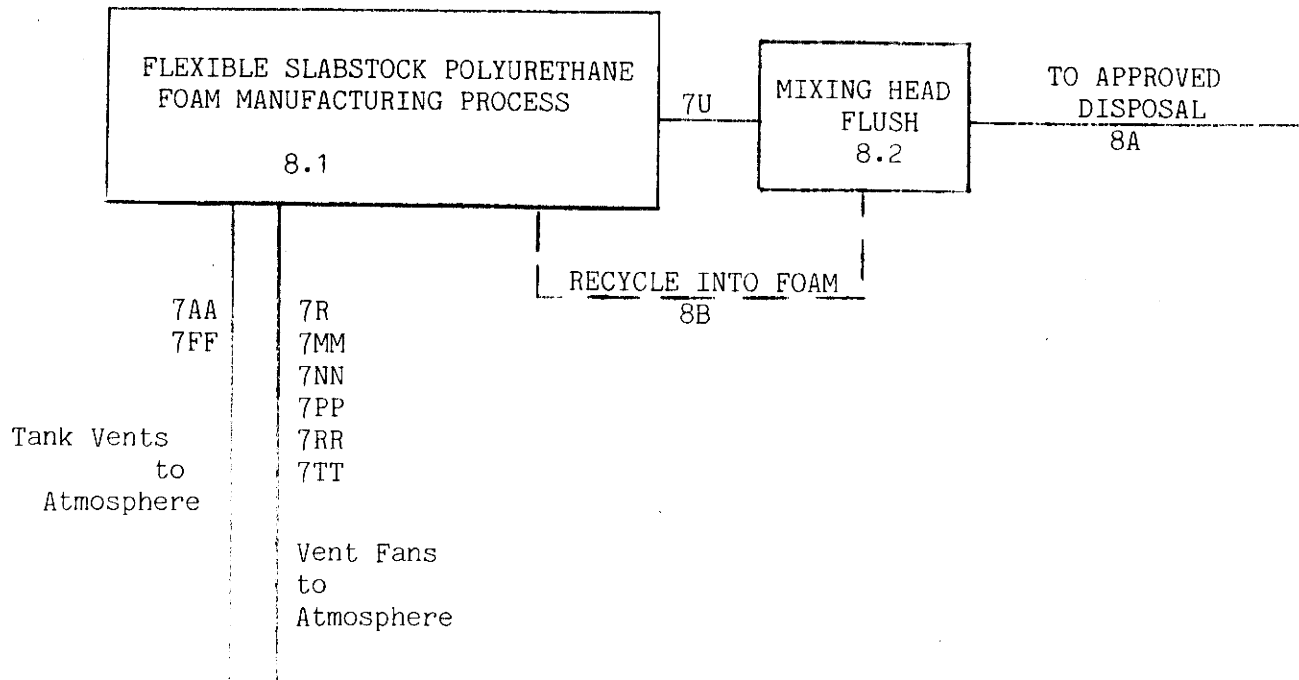
a. Process Stream ID Code	b. Known Compounds <sup>1</sup>	c. Concen- trations <sup>2,3</sup> (% or ppm)	d. Other Expected Compounds	e. Estimated Concentrations (% or ppm)
7-E,T,U(L,M,N,O,P)	Silicones	100%(E)(W)	N/A	N/A
7-F,T,U(L,M,N,O,P)	Liquid Additives Additive Pkg #1	N/A	N/A	N/A
7-G,L,M,N,O,P	Solid Additives Additive Pkg #2	N/A	N/A	N/A
7-V,X,7,2,p	M/C	100%(E)(W)	N/A	N/A
7-W,X,Y,Z,P	Freon	99.4%(A)(W)	H <sub>2</sub> O	5 PPM
7-P,Q,S,OO,QQ, SS,UU,VV,WW	Polyurethane Foam	100%(E)(W)	N/A	N/A
7-R,MM,NN,PP,RR,TT	Process Ventilation	UK	N/A	N/A
7-AA,FF	TDI Ventilation	UK	N/A	N/A
7-H	Polyol Ventilation	UK	N/A	N/a

7.06 continued below

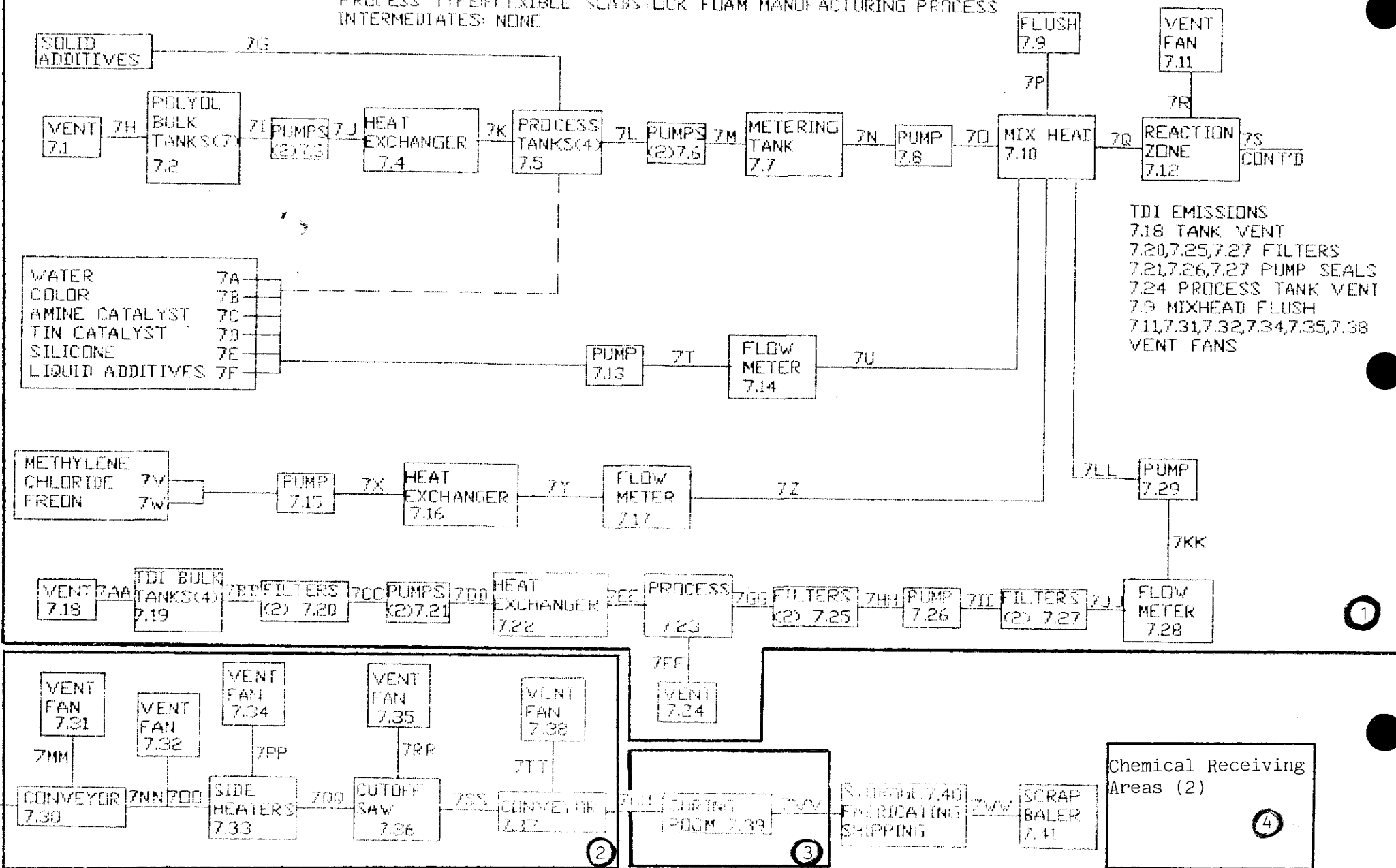
☐ Mark (X) this box if you attach a continuation sheet.

8.01

**PROCESS TYPE;** Flexible Slabstock Polyurethane Foam Manufacturing Process



PROCESS TYPE/FLEXIBLE SLABSTOCK FOAM MANUFACTURING PROCESS  
INTERMEDIATES: NONE



9.06 Complete the following table for each work area identified in question 9.05, and for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance. Photocopy this question CBI and complete it separately for each process type and work area.

☐ Process type ..... Flexible Slabstock Polyurethane Foam Manufacturing Process

Work area ..... 2

Labor Category	Number of Workers Exposed	Mode of Exposure (e.g., direct skin contact)	Physical State of Listed Substance <sup>1</sup>	Average Length of Exposure Per Day <sup>2</sup>	Number of Days per Year Exposed
<u>A,B,E,F</u>	<u>4</u>	<u>Inhalation</u>	<u>GU</u>	<u>D</u>	<u>245</u>

<sup>1</sup>Use the following codes to designate the physical state of the listed substance at the point of exposure:

GC = Gas (condensable at ambient temperature and pressure)  
 GU = Gas (uncondensable at ambient temperature and pressure; includes fumes, vapors, etc.)  
 SO = Solid

SY = Sludge or slurry  
 AL = Aqueous liquid  
 OL = Organic liquid  
 IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

<sup>2</sup>Use the following codes to designate average length of exposure per day:

A = 15 minutes or less  
 B = Greater than 15 minutes, but not exceeding 1 hour  
 C = Greater than one hour, but not exceeding 2 hours

D = Greater than 2 hours, but not exceeding 4 hours  
 E = Greater than 4 hours, but not exceeding 8 hours  
 F = Greater than 8 hours

☐ Mark (X) this box if you attach a continuation sheet.



9.06 Complete the following table for each work area identified in question 9.05, and for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance. Photocopy this question and complete it separately for each process type and work area.

☐ Process type ..... Flexible Slabstock Polyurethane Foam Manufacturing Process

Work area ..... 3

Labor Category	Number of Workers Exposed	Mode of Exposure (e.g., direct skin contact)	Physical State of Listed Substance <sup>1</sup>	Average Length of Exposure Per Day <sup>2</sup>	Number of Days per Year Exposed
A,B,E,F,G	5	Inhalation	GU	D	245

<sup>1</sup>Use the following codes to designate the physical state of the listed substance at the point of exposure:

GC = Gas (condensable at ambient temperature and pressure)  
 GU = Gas (uncondensable at ambient temperature and pressure; includes fumes, vapors, etc.)  
 SO = Solid

SY = Sludge or slurry  
 AL = Aqueous liquid  
 OL = Organic liquid  
 IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

<sup>2</sup>Use the following codes to designate average length of exposure per day:

A = 15 minutes or less  
 B = Greater than 15 minutes, but not exceeding 1 hour  
 C = Greater than one hour, but not exceeding 2 hours

D = Greater than 2 hours, but not exceeding 4 hours  
 E = Greater than 4 hours, but not exceeding 8 hours  
 F = Greater than 8 hours

☐ Mark (X) this box if you attach a continuation sheet.

9.06 Complete the following table for each work area identified in question 9.05, and for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance. Photocopy this question and complete it separately for each process type and work area.

☐ Process type ..... Flexible Slabstock Polyurethane Foam Manufacturing Process

Work area ..... 4

Labor Category	Number of Workers Exposed	Mode of Exposure (e.g., direct skin contact)	Physical State of Listed Substance <sup>1</sup>	Average Length of Exposure Per Day <sup>2</sup>	Number of Days per Year Exposed
A,B,E,F	4	Inhalation	GU	A	34
E,F	2	Direct Skin Contact	OL	B	34

<sup>1</sup>Use the following codes to designate the physical state of the listed substance at the point of exposure:

GC = Gas (condensable at ambient temperature and pressure)  
 GU = Gas (uncondensable at ambient temperature and pressure; includes fumes, vapors, etc.)  
 SO = Solid

SY = Sludge or slurry  
 AL = Aqueous liquid  
 OL = Organic liquid  
 IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

<sup>2</sup>Use the following codes to designate average length of exposure per day:

A = 15 minutes or less  
 B = Greater than 15 minutes, but not exceeding 1 hour  
 C = Greater than one hour, but not exceeding 2 hours

D = Greater than 2 hours, but not exceeding 4 hours  
 E = Greater than 4 hours, but not exceeding 8 hours  
 F = Greater than 8 hours

☐ Mark (X) this box if you attach a continuation sheet.

9.07 For each labor category represented in question 9.06, indicate the 8-hour Time Weighted Average (TWA) exposure levels and the 15-minute peak exposure levels. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type ..... Flexible Slabstock Polyurethane Foam Manufacturing Process

Work area ..... 2

Labor Category	8-hour TWA Exposure Level (ppm, mg/m <sup>3</sup> , other-specify)	15-Minute Peak Exposure Level (ppm, mg/m <sup>3</sup> , other-specify)
A	.002 PPM	.0045 PPM
B	UK	UK
E	.002 PPM	.0037 PPM
F	.001 PPM	.003 PPM

☐ Mark (X) this box if you attach a continuation sheet.

9.07 For each labor category represented in question 9.06, indicate the 8-hour Time Weighted Average (TWA) exposure levels and the 15-minute peak exposure levels. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type ..... Flexible Slabstock Polyurethane Foam Manufacturing Process

Work area ..... 3

Labor Category	8-hour TWA Exposure Level (ppm, mg/m <sup>3</sup> , other-specify)	15-Minute Peak Exposure Level (ppm, mg/m <sup>3</sup> , other-specify)
A	.002 PPM	.0045 PPM
B	UK	UK
E	.002 PPM	.0037 PPM
F	.001 PPM	.003 PPM
G	UK	UK

☐ Mark (X) this box if you attach a continuation sheet.

9.07 For each labor category represented in question 9.06, indicate the 8-hour Time Weighted Average (TWA) exposure levels and the 15-minute peak exposure levels. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type ..... Flexible Slabstock Polyurethane Foam Manufacturing Process

Work area ..... 4

Labor Category	8-hour TWA Exposure Level (ppm, mg/m <sup>3</sup> , other-specify)	15-Minute Peak Exposure Level (ppm, mg/m <sup>3</sup> , other-specify)
A	.002 PPM	.0045 PPM
B	UK	UK
E	.002 PPm	.0037 PPM
F	.001 PPM	.003 PPM

☐ Mark (X) this box if you attach a continuation sheet.

PART C ENGINEERING CONTROLS

9.12 Describe the engineering controls that you use to reduce or eliminate worker exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type ..... Flexible Slabstock Polyurethane Foam Manufacturing Process

Work area ..... 2

Engineering Controls	Used (Y/N)	Year Installed	Upgraded (Y/N)	Year Upgraded
Ventilation:				
Local exhaust	Y	1970	Y	1982
General dilution	N/A	N/A	N/A	N/A
Other (specify)				
	N/A	N/A	N/A	N/A
Vessel emission controls	N/A	N/A	N/A	N/A
Mechanical loading or packaging equipment	N/A	N/A	N/A	N/A
Other (specify)				

☐ Mark (X) this box if you attach a continuation sheet.

PART C ENGINEERING CONTROLS

9.12 Describe the engineering controls that you use to reduce or eliminate worker exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type ..... Flexible Slabstock Polyurethane Foam Manufacturing Process

Work area ..... 3

<u>Engineering Controls</u>	<u>Used (Y/N)</u>	<u>Year Installed</u>	<u>Upgraded (Y/N)</u>	<u>Year Upgraded</u>
Ventilation:				
Local exhaust	<u>Y</u>	<u>1973</u>	<u>N</u>	<u>N/A</u>
General dilution	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
Other (specify)	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
Vessel emission controls	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
Mechanical loading or packaging equipment	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
Other (specify)				

☐ Mark (X) this box if you attach a continuation sheet.

PART C ENGINEERING CONTROLS

9.12 Describe the engineering controls that you use to reduce or eliminate worker exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type ..... Flexible Slabstock Polyurethane Foam Manufacturing Process

Work area ..... 4

<u>Engineering Controls</u>	<u>Used (Y/N)</u>	<u>Year Installed</u>	<u>Upgraded (Y/N)</u>	<u>Year Upgraded</u>
Ventilation:				
Local exhaust	N	N/A	N/A	N/A
General dilution	N/A	N/A	N/A	N/A
Other (specify)				
	N/A	N/A	N/A	N/A
Vessel emission controls	N/A	N/A	N/A	N/A
Mechanical loading or packaging equipment	N/A	N/A	N/A	N/A
Other (specify)				

☐ Mark (X) this box if you attach a continuation sheet.



9.13 Describe all equipment or process modifications you have made within the 3 years prior to the reporting year that have resulted in a reduction of worker exposure to the listed substance. For each equipment or process modification described, state the percentage reduction in exposure that resulted. Photocopy this question and complete it separately for each process type and work area.

CBI  
☐ Process type ..... Flexible Slabstock Polyurethane Foam Manufacturing Process

Work area ..... 2

Equipment or Process Modification	Reduction in Worker Exposure Per Year (%)
None	N/A

☐ Mark (X) this box if you attach a continuation sheet.

9.13 Describe all equipment or process modifications you have made within the 3 years prior to the reporting year that have resulted in a reduction of worker exposure to the listed substance. For each equipment or process modification described, state the percentage reduction in exposure that resulted. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type ..... Flexible Slabstock Polyurethane Foam Manufacturing Process

Work area ..... 3

<u>Equipment or Process Modification</u>	<u>Reduction in Worker Exposure Per Year (%)</u>
<u>None</u>	<u>N/A</u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>
<u> </u>	<u> </u>

☐ Mark (X) this box if you attach a continuation sheet.

9.13 Describe all equipment or process modifications you have made within the 3 years prior to the reporting year that have resulted in a reduction of worker exposure to the listed substance. For each equipment or process modification described, state the percentage reduction in exposure that resulted. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type ..... Flexible Slabstock Polyurethane Foam Manufacturing Process

Work area ..... 4

Equipment or Process Modification	Reduction in Worker Exposure Per Year (%)
None	N/A

☐ Mark (X) this box if you attach a continuation sheet.

PART D PERSONAL PROTECTIVE AND SAFETY EQUIPMENT

9.14 Describe the personal protective and safety equipment that your workers wear or use in each work area in order to reduce or eliminate their exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

[ ] Process type ..... Flexible Slabstock Polyurethane Foam Manufacturing Process

Work area ..... 2

<u>Equipment Types</u>	<u>Wear or Use (Y/N)</u>
Respirators	Y
Safety goggles/glasses	Y
Face shields	N
Coveralls	N
Bib aprons	N
Chemical-resistant gloves	Y
Other (specify)	

[ ] Mark (X) this box if you attach a continuation sheet.

PART D PERSONAL PROTECTIVE AND SAFETY EQUIPMENT

9.14 Describe the personal protective and safety equipment that your workers wear or use in each work area in order to reduce or eliminate their exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type ..... Flexible Slabstock Polyurethane Foam Manufacturing Process

Work area ..... 3

<u>Equipment Types</u>	<u>Wear or Use (Y/N)</u>
Respirators	<u>Y</u>
Safety goggles/glasses	<u>N</u>
Face shields	<u>N</u>
Coveralls	<u>N</u>
Bib aprons	<u>N</u>
Chemical-resistant gloves	<u>N</u>
Other (specify)	
_____	_____
_____	_____

☐ Mark (X) this box if you attach a continuation sheet.

PART D PERSONAL PROTECTIVE AND SAFETY EQUIPMENT

9.14 Describe the personal protective and safety equipment that your workers wear or use in each work area in order to reduce or eliminate their exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type ..... Flexible Slabstock Polyurethane Foam Manufacturing Process

Work area ..... 4

<u>Equipment Types</u>	<u>Wear or Use (Y/N)</u>
Respirators	<u>Y</u>
Safety goggles/glasses	<u>Y</u>
Face shields	<u>N</u>
Coveralls	<u>N</u>
Bib aprons	<u>N</u>
Chemical-resistant gloves	<u>Y</u>
Other (specify)	
_____	_____
_____	_____

☐ Mark (X) this box if you attach a continuation sheet.

**PART E WORK PRACTICES**

**9.19** Describe all of the work practices and administrative controls used to reduce or eliminate worker exposure to the listed substance (e.g., restrict entrance only to authorized workers, mark areas with warning signs, insure worker detection and monitoring practices, provide worker training programs, etc.). Photocopy this question and complete it separately for each process type and work area.

**CBI**

☐

Process type ..... Flexible Slabstock Polyurethane Foam Manufacturing Process

Work area ..... 2

Respirator Protection

Limited Access

Warning Signs/Posters

Worker Training Programs

Exposure Monitoring

Safe Operating Procedures

**9.20** Indicate (X) how often you perform each housekeeping task used to clean up routine leaks or spills of the listed substance. Photocopy this question and complete it separately for each process type and work area.

Process type ..... Flexible Slabstock Polyurethane Foam Manufacturing Process

Work area ..... 2

<u>Housekeeping Tasks</u>	<u>Less Than Once Per Day</u>	<u>1-2 Times Per Day</u>	<u>3-4 Times Per Day</u>	<u>More Than 4 Times Per Day</u>
Sweeping	N/A	N/A	N/A	N/A
Vacuuming	N/A	N/A	N/A	N/A
Water flushing of floors	N/A	N/A	N/A	N/A
Other (specify)				

☐ Mark (X) this box if you attach a continuation sheet.

**PART E WORK PRACTICES**

- 9.19** Describe all of the work practices and administrative controls used to reduce or eliminate worker exposure to the listed substance (e.g., restrict entrance only to authorized workers, mark areas with warning signs, insure worker detection and monitoring practices, provide worker training programs, etc.). Photocopy this question and complete it separately for each process type and work area.

**CBI**

☐

Process type ..... Flexible Slabstock Polyurethane Foam Manufacturing Process

Work area ..... 3

Respirator Protection

Training Signs/Posters

Worker Training Programs

Safe Operating Procedures

- 9.20** Indicate (X) how often you perform each housekeeping task used to clean up routine leaks or spills of the listed substance. Photocopy this question and complete it separately for each process type and work area.

Process type ..... Flexible Slabstock Polyurethane Foam Manufacturing Process

Work area ..... 3

<u>Housekeeping Tasks</u>	<u>Less Than Once Per Day</u>	<u>1-2 Times Per Day</u>	<u>3-4 Times Per Day</u>	<u>More Than 4 Times Per Day</u>
Sweeping	N/A	N/A	N/A	N/A
Vacuuming	N/A	N/A	N/A	N/A
Water flushing of floors	N/A	N/A	N/A	N/A
Other (specify)				

☐ Mark (X) this box if you attach a continuation sheet.



## PART E WORK PRACTICES

- 9.19 Describe all of the work practices and administrative controls used to reduce or eliminate worker exposure to the listed substance (e.g., restrict entrance only to authorized workers, mark areas with warning signs, insure worker detection and monitoring practices, provide worker training programs, etc.). Photocopy this question and complete it separately for each process type and work area.

CBI

☐

Process type ..... Flexible Slabstock Polyurethane Foam Manufacturing Process

Work area ..... 4

Respirator Protection

Safety Glasses

Warning Signs/Posters

Worker Training Programs

Exposure Monitoring

Safe Operating Procedures

- 9.20 Indicate (X) how often you perform each housekeeping task used to clean up routine leaks or spills of the listed substance. Photocopy this question and complete it separately for each process type and work area.

Process type ..... Flexible Slabstock Polyurethane Foam Manufacturing Process

Work area ..... 4

Housekeeping Tasks	Less Than Once Per Day	1-2 Times Per Day	3-4 Times Per Day	More Than 4 Times Per Day
Sweeping	x	N/A	N/A	N/A
Vacuuming	N/A	N/A	N/A	N/A
Water flushing of floors	N/A	N/A	N/A	N/A
Other (specify)				

☐ Mark (X) this box if you attach a continuation sheet.

9.22 Where are copies of the plan maintained?

In Plant

Corporate Head Quarters

Indiana Emergency Response Commission

Local Fire Department

Community Emergency Response Commission

9.22 Where are copies of the plan maintained?

In Plant

Corporate Head Quarters

Indiana Emergency Response Commission

Local Fire Department

Community Emergency Response Commission